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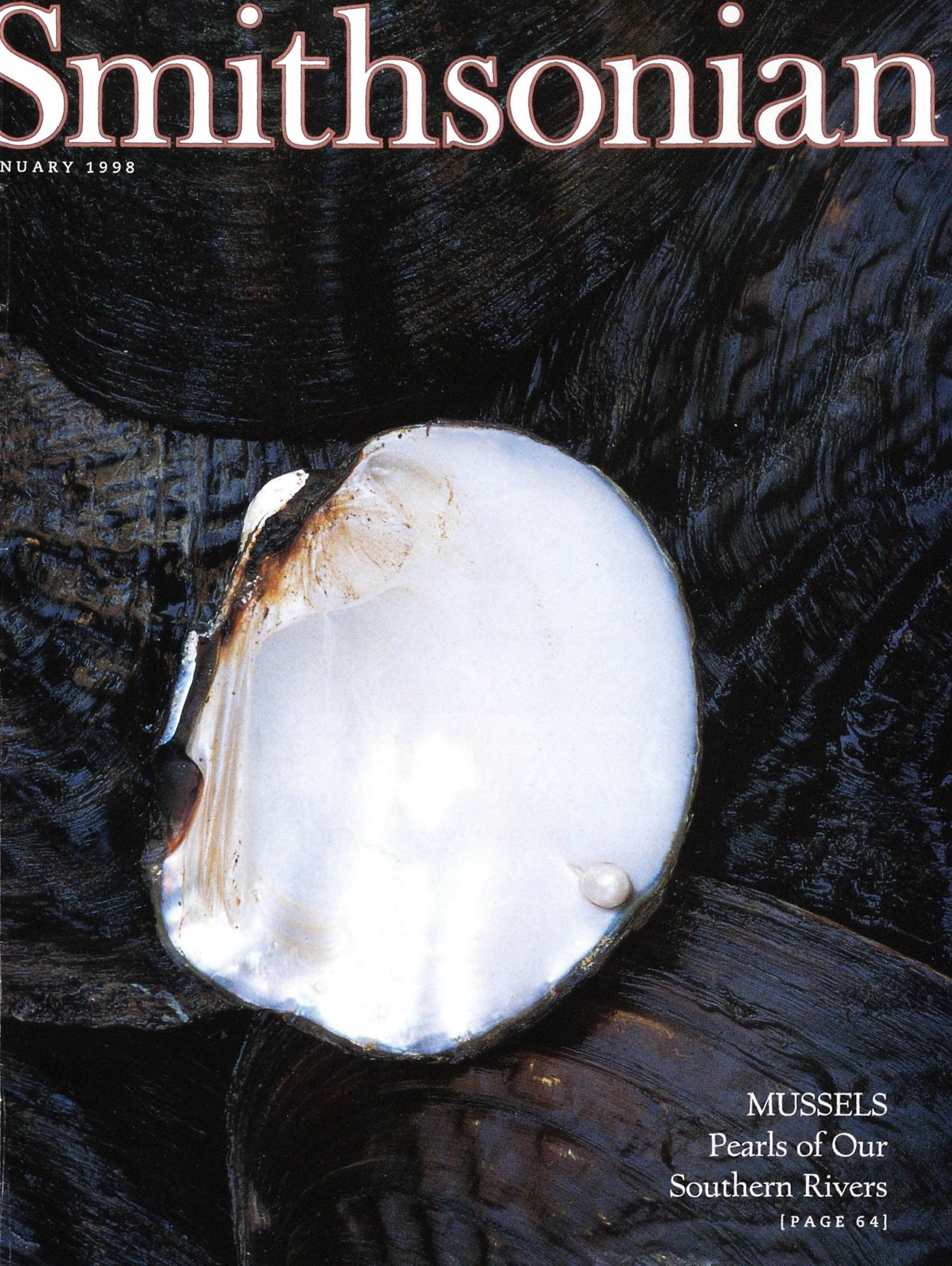
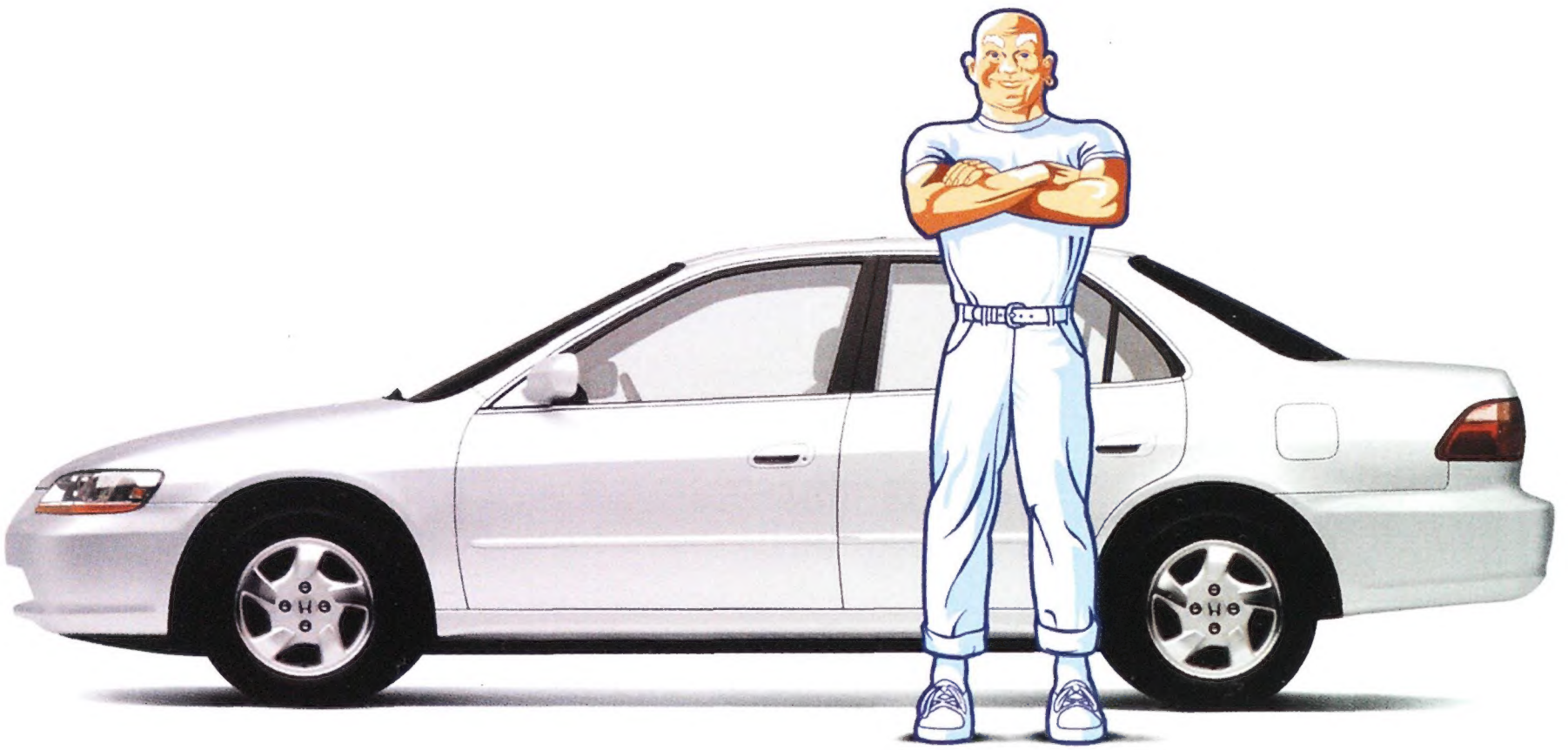


MUSSELS
Pearls of Our Southern Rivers

[PAGE 64]



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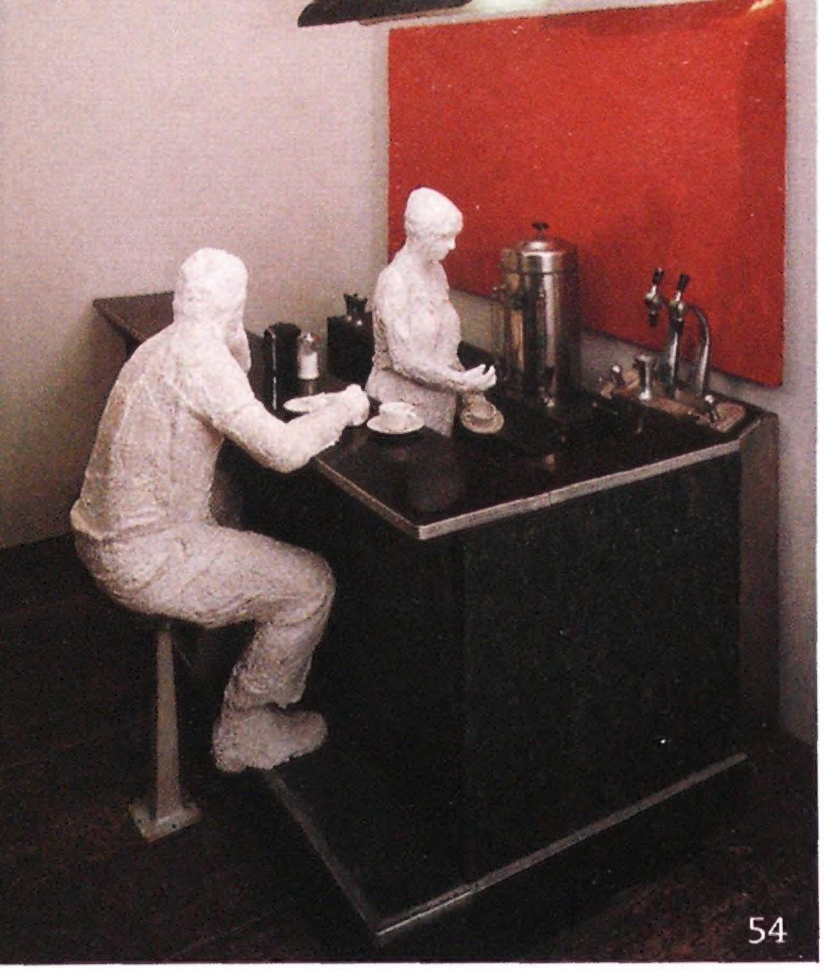
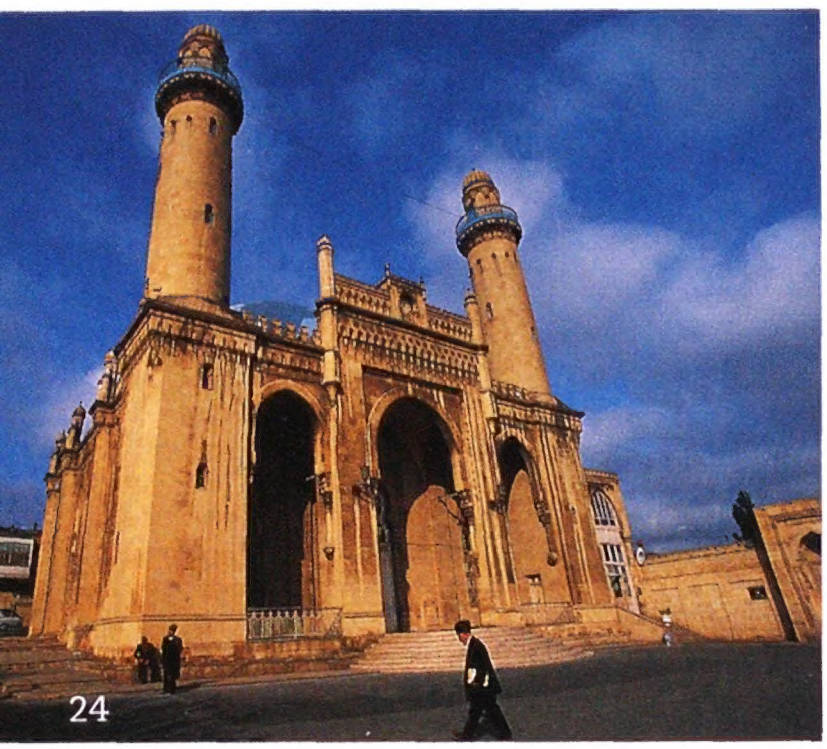
HONDA
Thinking.





SMITHSONIAN

features

JANUARY 1998 ♜ VOLUME 28, NUMBER 10

24 Waiting for the Oil Boom
Cafés, hotels and casinos are popping up in Baku, as the city anticipates a new wave of prosperity from black gold
BY RUTH DANILOFF ♜ PHOTOGRAPHS BY ENRICO FERORELLI

36 Solving the Aging Puzzle
Why do we grow old? Gerontologist Steven Austad believes parakeets and flying squirrels may provide the answer
BY DOUG STEWART ♜ PHOTOGRAPHS BY BRAD TRENT

44 "Your Opponent Must Be Destroyed"
The cerebral—some would say dull—game of chess becomes a clash of titans when the top players match wits and egos
BY RUDOLPH CHELMINSKI ♜ ILLUSTRATIONS BY JEFF SEAVER

54 Art That Turns Life Inside Out
Standing in a breadline or just having a cup of joe, George Segal's plaster sculptures make us see ourselves anew
BY PHYLLIS TUCHMAN

64 To Reproduce, Mussels Go Fishing
With larvae disguised as minnows, worms and other bait, the clever bivalves catch hosts for their pearl-makers-to-be
BY ADELE CONOVER ♜ PHOTOGRAPHS BY LYNDA RICHARDSON

74 Roll Over, Beethoven
At Paul McCartney's "Fame" school in Liverpool, would-be Dylans and Streeps learn the ways of the stage—and street
BY SUE ARNOLD ♜ PHOTOGRAPHS BY PATRICK WARD

82 The Lure of Gold
The people and places of the California gold rush shine forth in a collection of cased images from that wild time

86 The ACLU Defends Everybody
This watchdog organization has gone to bat for many unpopular groups, Nazis to Communists, all to preserve our rights
BY KEN CHOWDER

Mexico City is a live mosaic. When Alexandra Themann saw Teotihuacan, she asked: "Where did that marvellous civilization go?" Now, she knows the answer: They´re all still here!

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A love affair with this magical city tends to last. When I decided to get my degree here, I was specially fascinated by the fusion of cultures and the quantity of archeological sites all around me. I still haven´t finished exploring them all. The variety is simply dazzling. But what I most love about Mexico City is the warmth and character of this people. They bring the mosaic to life!"

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departments

JANUARY 1998 VOLUME 28, NUMBER 10

COVER

Cover A pearl glistens amid washboard mussel shells. Washboards are freshwater mussels common in the Southeast, particularly in the Tennessee River area. When a piece of debris gets caught between the mantle and the shell of a mussel, the mussel coats it with nacre, the pearly substance on the inside of the shell, and a pearl is born.
PHOTOGRAPH BY LYNDA RICHARDSON

14 Letters to the Editor

100 Additional Sources

101 Picture Credits

102 Smithsonian Study Tours and Seminars

11 Smithsonian Perspectives
Museums and Marketing
BY SECRETARY I. MICHAEL HEYMAN

16 The Object at Hand
Stamps—What an Idea!
BY JOHN ROSS

20 Smithsonian Highlights
Imperial Japan's Artistic Legacy
Highlights Calendar starts on page 22

98 Book Reviews
Rachel Carson: Witness for Nature by Linda Lear
Kingbird Highway: The Story of a Natural Obsession That Got a Little Out of Hand by Kenn Kaufman

104 The Last Page
No Tea, But Sympathy
BY EDITH PEARLMAN

20

You always said you'd start
planning for the future when
you got your first job.
Then it was when you got married.
Then when you had kids.
So what's your plan?
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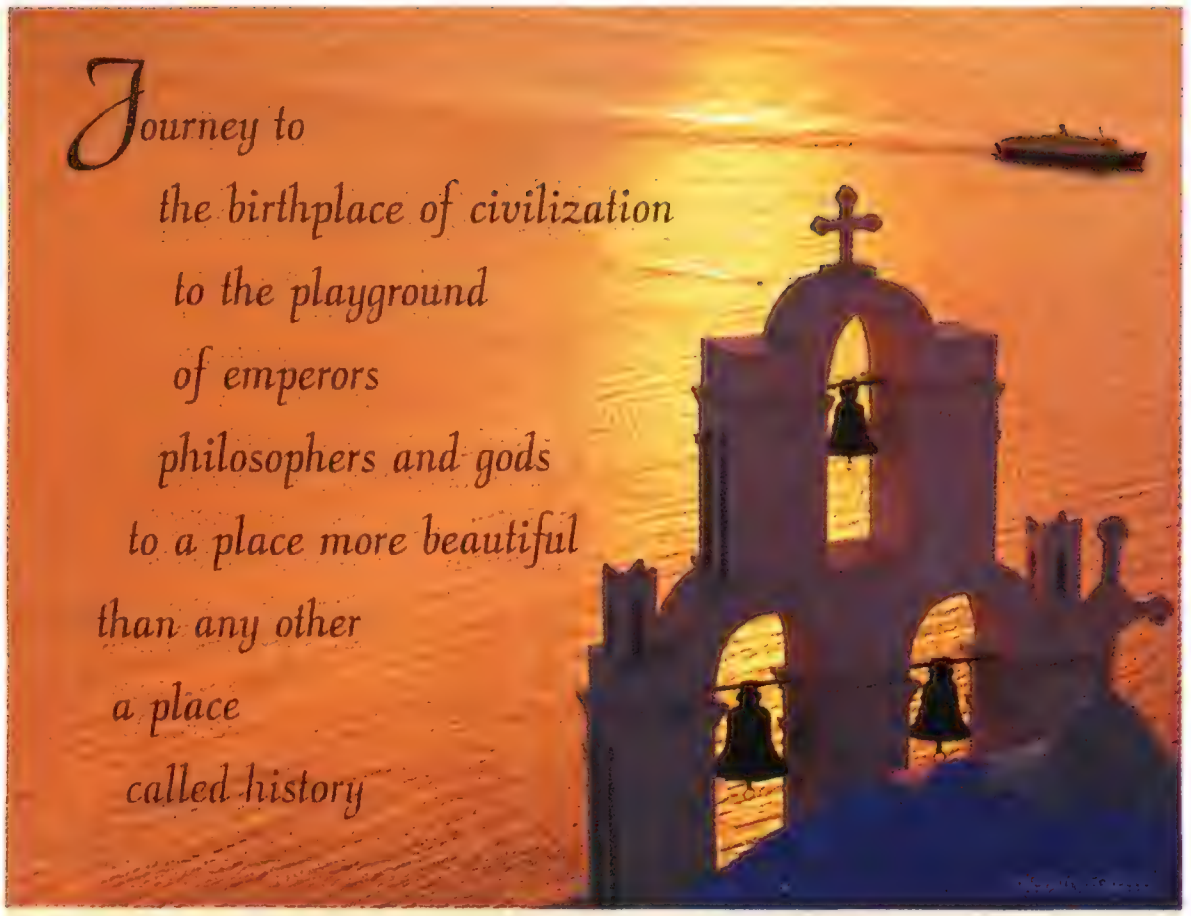

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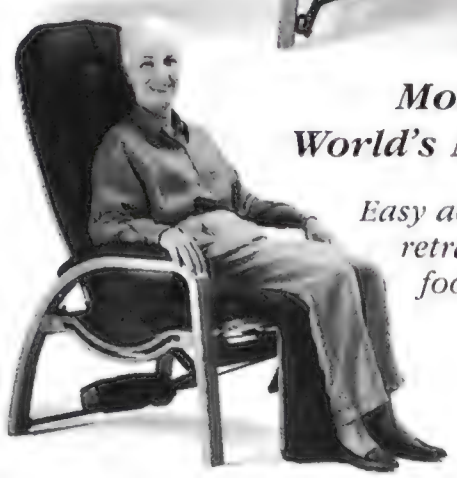

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SMITHSONIAN

PERSPECTIVES

Museums and Marketing

AS PHILANTHROPY EBBS, THE SMITHSONIAN COUNCIL ADVISES PRUDENCE IN OUR SEARCH FOR CORPORATE SPONSORSHIP

THE SMITHSONIAN INSTITUTION HAS A NUMBER OF advisory groups. These museum boards and commissions, which include scholars and other interested private citizens, offer advice on programs, and budget and planning, and play a role in the ongoing evaluation of directors.

One of the key advisory boards to the Regents and the Secretary is the Smithsonian Institution Council. It is made up principally of people from the academic world, including Nobelists, artists, critics, museum directors, distinguished professors, media experts, philosophers and writers. The Council was created to review and debate topics embracing the entire Institution, including all of its units and interrelationships. Since I became Secretary, I have asked for Council review of three issues affecting the whole Institution. This column concerns Council advice on corporate partnerships.

As many of you will recall, I indicated at the beginning of my term that resources are a central problem for the Smithsonian Institution in this era. I predicted limitations on the growth of federal funding for new programs and the consequent need to increase revenues from other sources, one important one being corporate support.

In the past three years, corporate funding has been an important source of additional revenues for our educational efforts in research, exhibitions and national outreach. We're grateful for that help. Unlike in the past, however, corporations now ask more from us than simple acknowledgment of support. For instance, in return for a sponsor's giving to the Smithsonian a percentage of its product sales, or funding an activity or exhibition, the sponsor may ask to use the Institution logo in corporate advertising, identifying the company as "a proud supporter of the Smithsonian." There are many other examples, not the least of which have been the corporate presentations that accompany the "America's Smithsonian" exhibition.

Two of our sponsors made it clear at the Council meeting that the value of the Smithsonian to corporations lies in pairing our identity (or "brand") with that of a corporation ("co-branding"). In corporate eyes, our well-known identity bespeaks "American," "integrity," "familiarity," "family," "history," "technology," "art" and similar concepts.

Given the new emphasis on marketing in corporate support, I sought the Smithsonian Council's perspective on the consequences to the Institution that might result from sponsorship rather than philanthropy. The Council discussion emphasized prudence in choosing corporate partners. Corporate identity can negatively affect the Smithsonian, especially in connection with questionable products (tobacco and alcohol, for instance), practices (such as providing substandard wages and working conditions) and occurrences (such as deleterious environmental events). And we must be able to sever relations if catastrophe occurs.

It also became clear that corporations that sponsor particular programs or exhibits are interested in the subject matter, but do not seek to affect specific content both as a matter of principle and to avoid debasing the independent reputation of the Smithsonian Institution, which is also important to them. This means that the corporate sector can be approached broadly for general Institution-wide support and more narrowly for targeted programs and exhibits. A number of corporations are more interested in our musical presentations, for instance, than in exhibits of objects and texts because they believe that their prospective customers will relate more closely to music.

Adamant critics of corporate sponsorships on the Council fear that the specificity of corporate interest will narrow the range of planned exhibitions and lead to self-censorship because of concerns that the Smithsonian "brand" might be less valuable to our sponsors. Most on the Council, and the Smithsonian Institution leadership, recognize these as potential problems but believe that treating corporate sponsorship as only one of a number of sources of support lessens the perceived threats.

On the broader issue, the Smithsonian already copes with strenuous critics in Congress, or people who enlist congressional support, whenever controversial programs are presented. Any corporate opposition is minor in this context. Corporations should be willing to accept the Institution's policy of not avoiding controversy but seeking a balanced presentation of subjects and ideas.

In general, we welcome corporate sponsorship opportunities, but we must review them carefully and maintain sensible oversight once we enter into contracts. We are grateful that a highly talented group of people dedicated to the welfare of the Institution devoted a two-day meeting to this topic, which is important not only to the Smithsonian but to museums throughout the United States.

I. MICHAEL HEYMAN, SECRETARY

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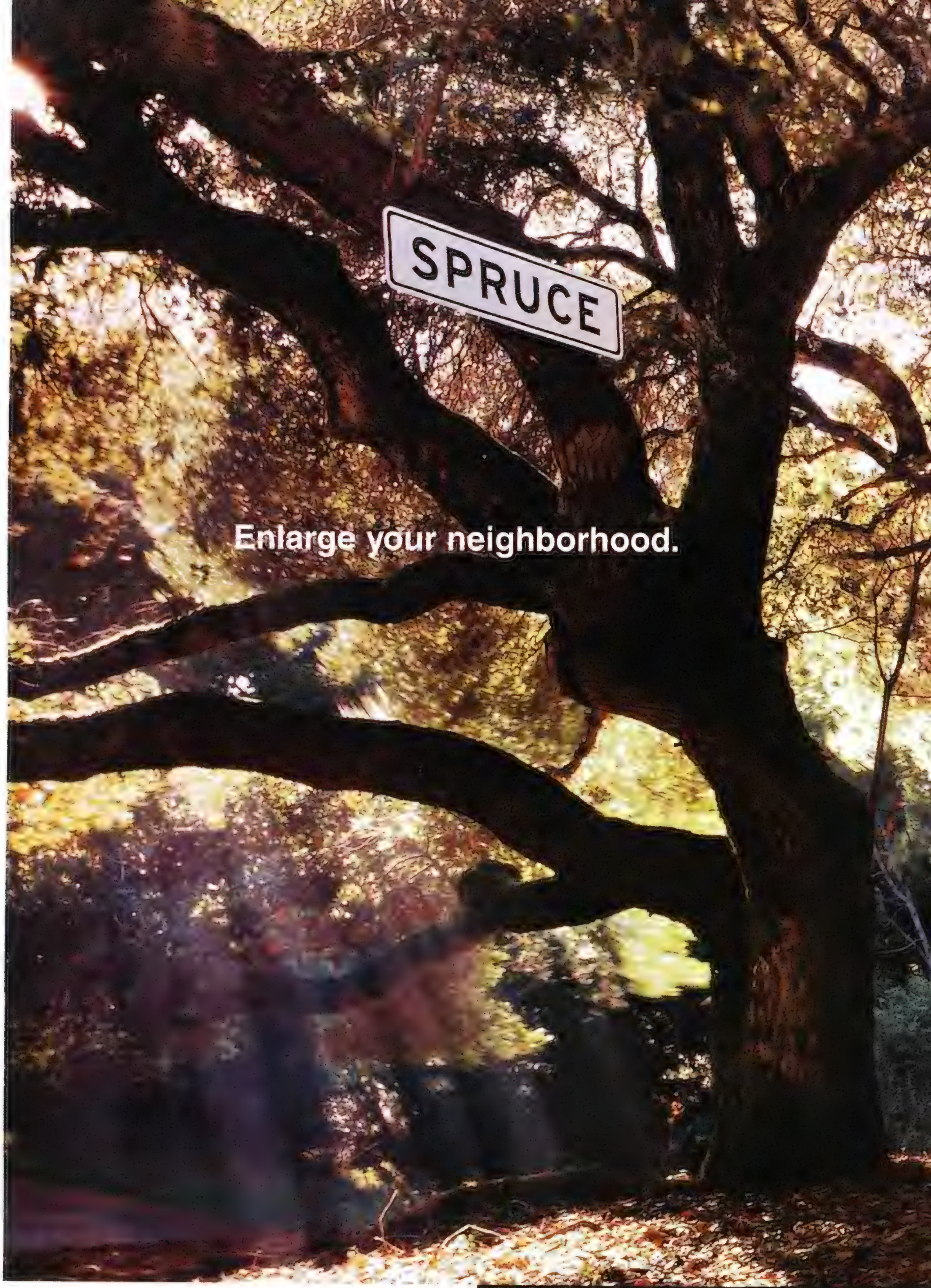

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MUSTANGS

MANY THANKS TO SMITHSONIAN FOR Yva Momatiuk's November cover story on mustangs. For those of us who love these horses, it was wonderful to see such a well-photographed and lovingly written article on these very special symbols of the West.

The American Indian Horse Registry accepts these horses for registration, and if they are started correctly, they make great riding mounts. While the Bureau of Land Management (BLM) adoption program is not perfect, it has saved many of these fine equines from becoming dog food.

Nanci Falley, President
American Indian Horse Registry, Inc.
Lockhart, Texas

YVA MOMATIUK HAS NOT PRESENTED a convincing argument to me for continuing the maintenance of an alien species in one of the last undisturbed environments in the United States. Wild horses compete with native populations of antelope, mule deer and bighorn sheep for scarce food and water; they destroy fences and troughs; and they spread disease to domestic stock and native animals alike. Wild horses are not "superbly adapted" to their environment as Momatiuk claims, nor it to them. Five hundred-odd years are not nearly enough for the flora of the West to have become adapted to the peculiarities of equine grazing. The horses significantly disturb the soil and plant life, especially when compared with native herbivores.

Current statistics show that more than 15,000 wild horses range on public lands. Efforts to sterilize wild mares have yet to succeed on a practical level, and the extermination of wild horses is forbidden, largely because of public outcry. No end to the growth of the wild horse population is in sight, but what happens when the number of horses finally exceeds the number of adoptive homes and the $16 million federal budget for wild horse management?

Is the mere romantic idea that somewhere out there the mustangs run free of greater value than the eminently attainable goal of a more ecologically balanced—and more truly wild—American West?

Tim Heffernan
Deep Springs College and Ranch
Deep Springs, California

MY FAMILY AND I HAVE ADOPTED four BLM mustangs, which we broke and trained. I use one of them as my mounted patrol partner on the Bishop, California, Police Department. These horses are not just national treasures, they are the heart, soul and pride of America.

Phil West
Big Pine, California

MIRIAM LESLIE

ALTHOUGH YOU ACKNOWLEDGED THE eminent biographer Madeleine Stern in your article, you misidentified her biography of Miriam Leslie in *Additional Sources*. The correct title is *Purple Passage: The Life of Mrs. Frank Leslie*.

Pamela Todhunter
Las Vegas, Nevada

GLOBE THEATER

RICHARD QUINNELL, ENGLISH MASTER Craftsman in Iron, invited artistic blacksmiths from around the world to submit forged examples of the flora and fauna to which Shakespeare referred in the body of his works. Pieces from more than 130 smiths in 19 countries were attached to Quinnell's gates for the reconstructed Globe theater. The primrose element you pictured on page 67 is mine.

John W. Pollins III
Greensburg, Pennsylvania

WARSAW

HAVING RECENTLY VISITED WARSAW and marveled at the story of its destruction and rebuilding, I found your article particularly evocative. The reference to the Warsaw Ghetto, however, was seriously misleading ("In the Ghetto Uprising . . . some 13,000 Jews were killed and the surviving 56,000 were transported to death camps"). When the uprising occurred in 1943, ninety percent of the population of the ghetto had already been murdered or had died of starvation or disease. In 1942, some 300,000 Jews were shipped to Treblinka where they were gassed upon arrival. The tragic history of Poland's Jews should not be understated, just as the tragedy and heroism of the city of Warsaw should not be forgotten.

Aliza Kolker
Fairfax, Virginia

LAST PAGE

IN HIS ESSAY "SYMBOLICALLY SPEAKing," Donald Dale Jackson overlooked New Mexico, the only state that has a state question: "Red or Green?" (as in chile, of course).

Suzanne Garney
Santa Fe, New Mexico

JACKSON'S WIT WAS RIGHT ON THE mark. The official neckwear of Arizona, however, is the bola tie—although it is sometimes spelled "bolo."

Richard L. Palmer
Prescott, Arizona

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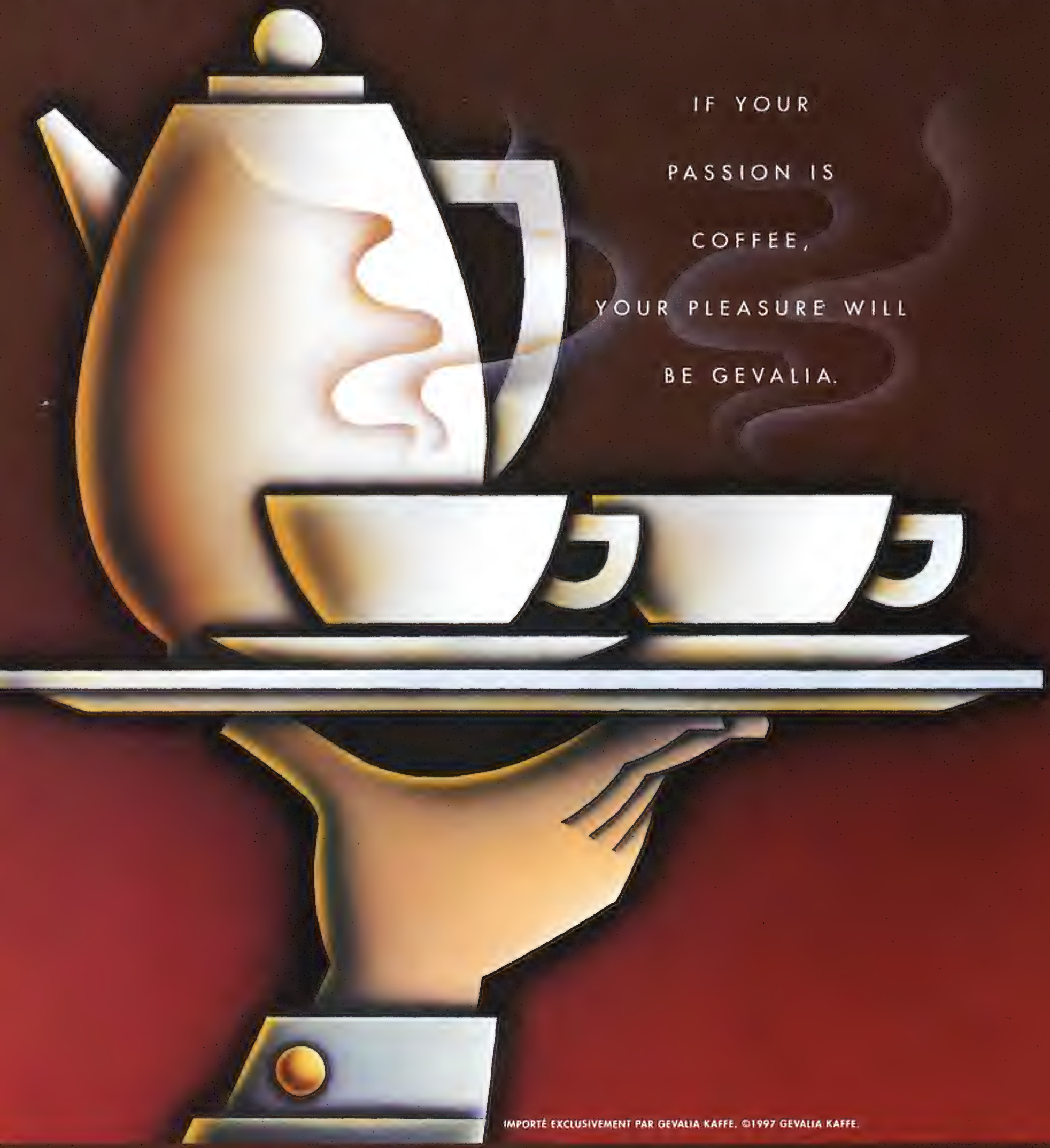

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Stamps—What an Idea!

NEW COMMEMORATIVES LOOK LIKE OUR FIRST STAMPS, WHICH WERE SLOW TO CATCH ON IN 1847

BY JOHN ROSS

WHEN THE UNITED States Post Office issued the first federal stamps 150 years ago, the public response was distinctly, well, lukewarm. No brass bands played. No first day covers were issued. Hardly anybody bothered to use the stamps, though they bore the images of Ben Franklin and George Washington. Up north in Portland, Maine, postmaster N. L. Woodbury didn't even know that the federal government had issued official stamps. He dashed off a note to U.S. Postmaster General Cave Johnson—mailing it without a stamp as was then the custom—to ask whether to honor these "apparently genuine" stamps.

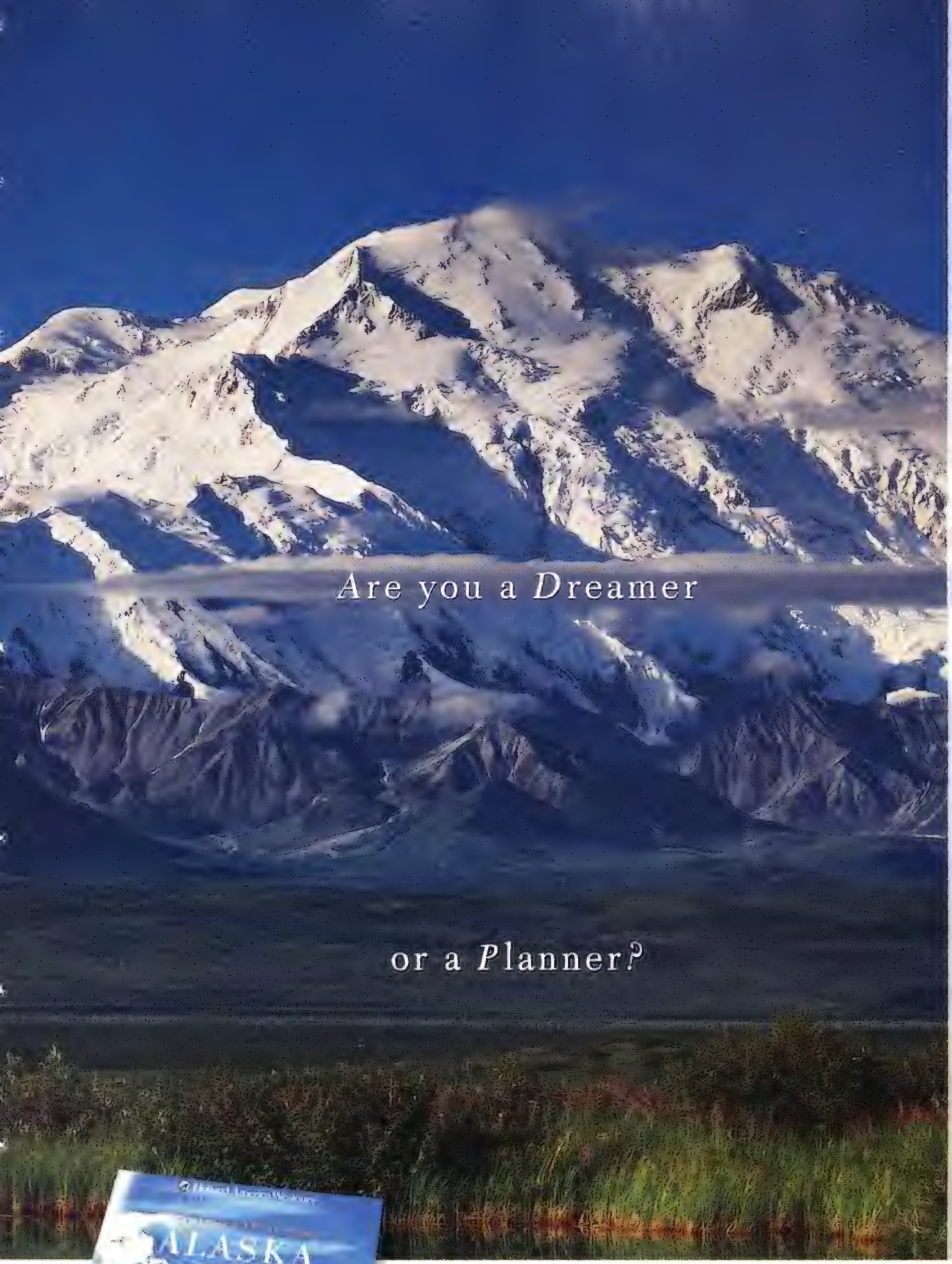
Judging by a daguerreotype of Cave Johnson, who carries a prominent brow that protects bulging, intense eyes, the Postmaster General wouldn't have seen the humor in this missive. His department had been operating under a deficit, and Johnson had sold Congress on the idea that stamps would increase postal revenues by increasing the convenience and reliability of mailing private letters. Congress was impressed, all right, but the public proved a harder sell. During the first five years after federal stamps were introduced, less than 2 percent of America's mail made use of them.

A smile might have flickered across Johnson's dour visage if anyone had told him that stamps would become a major source of revenue. In 1993, some 517 million Elvis Presley stamps were sold; many popular single stamps bring the United States Postal Service revenues that over time rival the earnings of a Hollywood blockbuster. It was thus in celebration of a true Postal Service pot of gold that, on the 150th anniversary of America's first federal stamps, the Smithsonian's National Postal Museum assembled a small exhibit about them—and a pair of just-issued commemorative look-alikes.

Back in 1847, the idea of a stamp seemed radical enough to put some Americans' backs up. Until then the federal postal system had operated without stamps. Mail usually traveled postage due. To claim a letter, the addressee, rather than the addressor, paid its postage. This C.O.D. system, paying for goods only upon delivery, made sense in the uncertain early years of the Republic. Stamps promised to flip this tradition on its head by shifting responsibility for paying postage from the recipient to the letter writer. Early reluctance to use stamps actually hinged on something more subtle but no less important. A stamped or prepaid letter was sometimes seen as a way to insult the recipient. According to Joe Geraci, a specialist at the National Postal Museum, prepaying a letter suggested that the recipient was too poor to pay for it himself.

Given the cost involved, this was not as bizarre as it now seems. Says Michael Laurence, editor of *Linn's Stamp News*, "paying for a letter was like receiving a collect call from China." A single-sheet letter from New York City to Buffalo cost 25 cents, a prohibitive price in a time when a good day's wage for a laborer was rarely more than one dollar. Add a couple of enclosures to the missive and the cost jumped to 75 cents. In 1845 a congressman calculated that a letter sent from the East or South to the Northwest cost the equivalent of a bushel of wheat—or a day's labor. Historian Richard R. John points out that in 1831 the exasperated political theorist Francis Lieber im-

The 1847 stamps and the new 1997 issues, paired with them here, offer slightly contrasting likenesses of Washington and Franklin—and very different prices.



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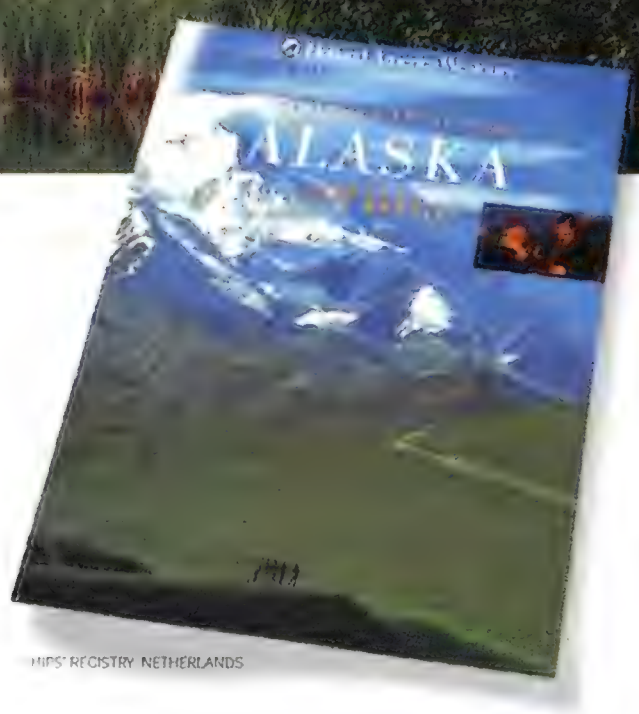

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plored letter writers to consider whether their epistle was "worth the postage." Meg Ausman, the historian of the U.S. Postal Service, says that in the 1830s one disgruntled individual harassed an enemy by sending him letters stuffed with blank pages.

Excessive costs probably kept some Americans from communicating through the mails. Many people who did receive mail simply refused to pay, rejecting the letter outright, which meant big headaches for the Post Office in mountains of dead letters. These had to be returned to the sender at government expense; the Post Office wound up paying for two deliveries with nothing in return.

Some historians credit one Rowland Hill, a British reformer and educator, with the idea of sticking a stamp on a letter before sending it. It seems to have struck him one day as he watched a housemaid receive a letter. She carefully scanned the envelope, deciphered a coded message from her lover, then refused to accept the mail. Postage was too expensive, Hill realized, and paid for by the wrong person. Prepaid stamps were the answer to both problems.

His pioneering efforts in England, aided by the winds of reform that blew across Europe in the 1840s, led to the overhaul of the British postal system, to a reduction of postal rates and to the introduction of its first national postage stamps, the Penny Black and the Two Pence Blue, in 1840. Brazil followed in 1843. Copying the British, the United States reformed its rate structure in 1845. Before that, distance and weight had determined the cost of a letter via a complex and byzantine price system under which each piece of mail was individually accounted for and marked with debits and credits.

The new reforms guaranteed a uniform rate structure at last. Half-ounce letters would now cost 5 cents when traveling under 300 miles, 10 cents for more. Then on July 1, 1847, the first federal "adhesive" stamps were issued.

Cave Johnson, Postmaster General in 1847, decided stamps would make money.

The choice of subjects to put on the first stamps seems straightforward. For the 5-cent issue a natural was Ben Franklin, the nation's first Postmaster General and a man notorious for saving money. It was fitting, too, that on the 10-cent stamp George Washington, first President and "father of his country," should outvalue Franklin two to one.

As America's first federal stamps, the pair became Scott 1 and Scott 2 in the universally accepted Scott stamp identification system. Today the Scott system lists more than 3,000 American stamps, of which Franklin (with at least 113) and Washington (with at least 276) are still the most frequently used subjects.

Despite the advantages of prepayment, some Americans clung to their old stampless ways. In 1855 Congress finally passed a law making the use of stamps compulsory. It was not until 1863, though, that regular free home delivery began. This was during the Civil War, and an apocryphal story links the introduction of home delivery to a compassionate postmaster in Cleveland. The sight of war widows receiving death notices and swooning in the post office stirred him to lobby for home delivery. "There is no real evidence to support this," postal historian Meg Ausman points out, "but it makes a good story." Prepayment and home delivery in turn encouraged the use of mailboxes, which made long waits at the post office unnecessary. According to Richard John, mailboxes especially helped women. From Colonial times, small, local post offices had been male bastions and gathering places, shunned by respectable women.

Letters, once the province of the tutored upper class, were easily available to the general public. In the history of the free exchange of ideas, this quiet revolution is perhaps equaled only by the telephone and the current boom of the Internet. Stamps and low rates also opened up opportunities to reach vast untapped audiences with advertisements and handbills. Junk mail blossomed.

Stamp collecting set in, and the term "philatelist" was coined; derived from the Greek, it means a "lover of something untaxed." "Philatelist" soon buried the more accurate and ominous-sounding term "timbromaniac" (literally "stamp lunatic"). The editors of *Linn's Stamp News* estimate that today 150,000 Americans collect stamps seriously, while at least 6 million pursue philately more casually. There are a lot of stamps to collect. Countries freed from the colonial yoke announce their independence to the world through stamps. Stamps are used as platforms to honor noble causes and historic events as well as worthy people. For many small countries, the sale of stamps remains an important source of revenue.

Philatelists lament the arrival of e-mail, television, faxes, express mail and other stampless communication shortcuts, and the new appellation "snail mail" is certainly not a good omen. Nevertheless, the recently issued commemorative Franklin and Washington stamps sold 12,174,540 copies between them just in the 11 days during which the Postal Service made them available.

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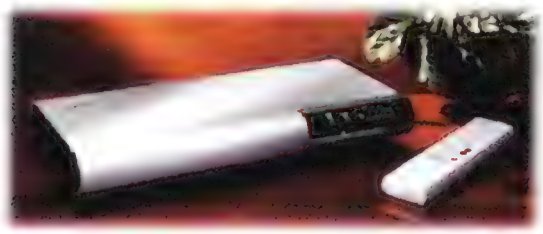

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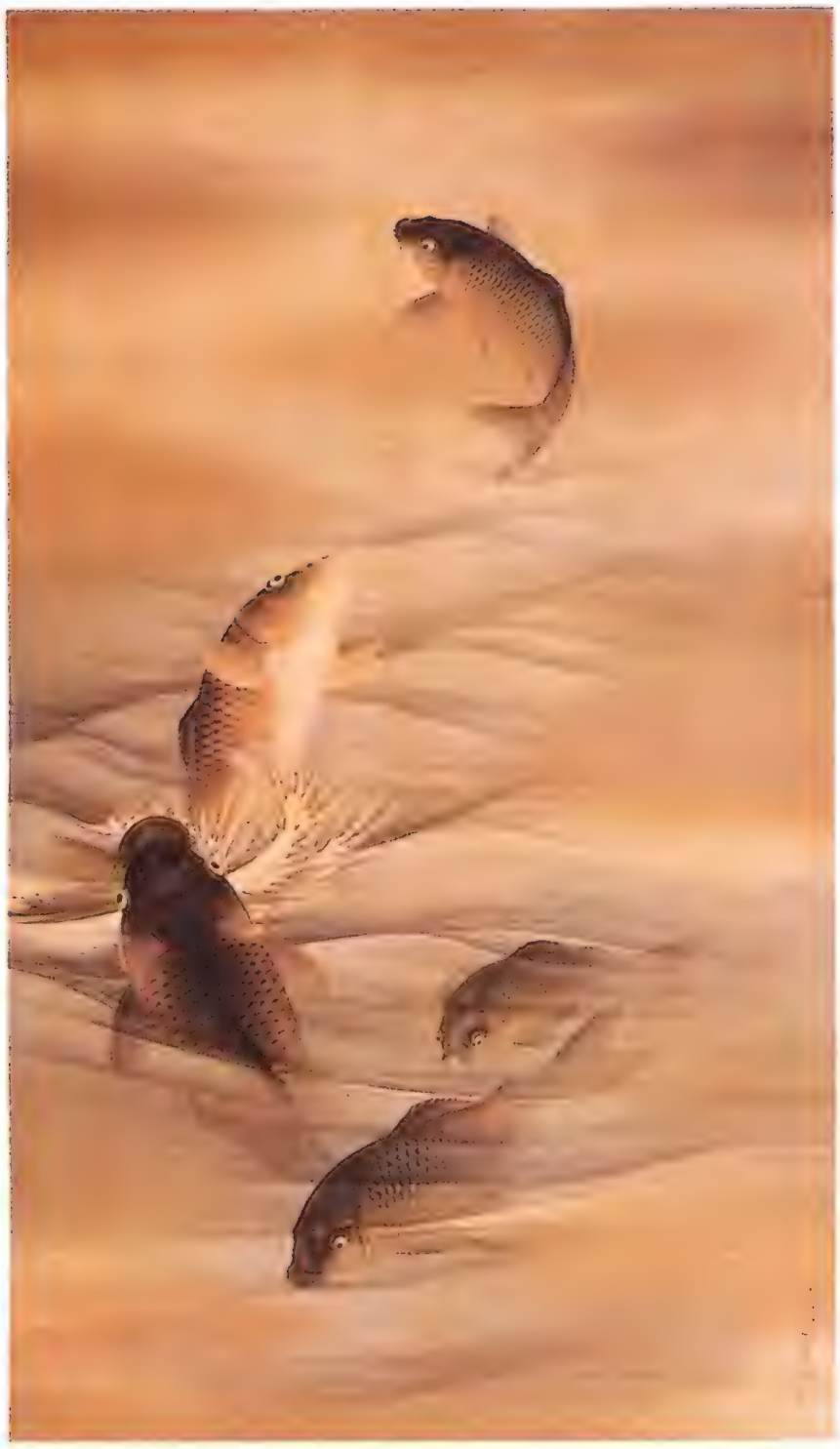

Imperial Japan's Artistic Legacy

SMITHSONIAN

HIGHLIGHTS

AN UNPRECEDENTED EXHIBITION OF PAINTings and works of calligraphy representing the taste and patronage of Japanese emperors from the 9th to the 20th century is currently on exclusive display at the Arthur M. Sackler Gallery through March 8. Organized by the Imperial Household Agency, the Agency for Cultural Affairs, the Japan Foundation and the Freer and Sackler galleries, "Twelve Centuries of Japanese Art from the Imperial Collections" is the first major overseas presentation of Japan's imperial holdings.

Over the centuries Japan's emperor-connoisseurs have maintained leadership as patrons, arbiters of taste, protectors and participants in the arts. "These masterpieces show how royal patronage has reflected and simultaneously influenced Japan's esthetic sensibilities," says Sackler and Freer director Milo Beach.

The 76 works in the show range from illustrated narrative hand scrolls to engaging depictions of flowers, birds and animals, such as the two hanging scrolls above: *Carp* by Fugii Shorin (1890) and *A Group of Roosters*, from the celebrated series *The Colorful Realm of Living Beings* by Ito Jakuchu (c. 1757-67). In 1989, many of these works were made a gift to the nation and consigned to the care of the Museum of the Imperial Collections in Tokyo. "These holdings," says exhibition curator James Ulak, "contain a startling variety of works that convey the spirit of past court glory and provide invaluable insight into the cultural history of Japan." —*Diane M. Bolz*

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SMITHSONIAN

HIGHLIGHTS

Special January Exhibitions, Events

ARTHUR M. SACKLER GALLERY

Twelve Centuries of Japanese Art from the Imperial Collections (through March 8) Show explores the court's role in the development of Japanese art. See page 20.

FREER GALLERY OF ART

In the Mountains (January 31-August 2) Exhibition examines the depiction of mountains in Chinese art.

NATIONAL MUSEUM OF AFRICAN ART

The Poetics of Line: Seven Artists of the Nsukka Group, Nigeria (through April 26) Works by seven contemporary Nigerian artists inspired by Igbo culture.

NATIONAL AIR AND SPACE MUSEUM

Star Wars: The Magic of Myth (through November 1) Exhibition commemorating the 20th anniversary of the *Star Wars* trilogy features original props, models, costumes and artworks. For ticket information, call 202-786-2122.

NATIONAL MUSEUM OF AMERICAN HISTORY

We Shall Overcome: Photographs from America's Civil Rights Era (January 15-February 8) Images by ten internationally recognized photographers.

NATIONAL POSTAL MUSEUM
[NEAR UNION STATION ON CAPITOL HILL]

Manning the Post (through December 18) Display profiles Colonial postmaster Mary Katherine Goddard.

NATIONAL MUSEUM OF NATURAL HISTORY

Janet Annenberg Hooker Hall of Geology, Gems and Minerals New permanent gallery showcases the National Gem Collection and takes visitors to the far reaches of the Solar System.

NATIONAL ZOOLOGICAL PARK

Amazonia Science Gallery New permanent exhibition looks at the work of Smithsonian biologists worldwide.

HIRSHHORN MUSEUM & SCULPTURE GARDEN

Stanley Spencer: An English Vision (through January 11) Landscapes, portraits, religious scenes, represent the 20th-century British artist's independent, eccentric vision.

NATIONAL PORTRAIT GALLERY

Edith Wharton's World: Portraits of People and Places (through January 25) Paintings, miniatures, photographs and literary artifacts.

NATIONAL MUSEUM OF AMERICAN ART

The Paintings of Charles Burchfield (through January 25) Works by the famed watercolorist are examined in the context of the artistic and cultural milieu in which he worked.

RENWICK GALLERY

Reinstallation of the Permanent Collection Thematic reinstallation features 19th- and 20th-century works in a variety of craft media.

ARTS AND INDUSTRIES BUILDING

Stories of the People (through January 25) Some 200 objects drawn from the collection of the National Museum of the American Indian.
In Search of Balance: The ArtistScholar (through March 11) Artworks by six African-American art historians.

INTERNATIONAL GALLERY, S. DILLON RIPLEY CENTER

Seeing Jazz (through January 19) SITES exhibition presents a panorama of artistic responses to jazz.

ANACOSTIA MUSEUM

Man Made: African American Men in the Quilting Tradition (January 18-June 23) Display of quilts by African-American men marks the reopening of the museum.

Planning a Smithsonian Visit?

Receive a free Associates' planning packet. Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call 202-357-2700 (voice) or 202-357-1729 (TTY), 9 A.M. - 5 P.M., Monday-Friday; 10 A.M. - 4 P.M., Saturday-Sunday. *Note:* Parking near the Smithsonian is limited. The Metrorail subway is convenient to all museums (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M. - 4 P.M. daily—in the Castle. Special materials await you there. The Court dining room and all other eating facilities in the National Museum of Natural History are closed. Associates may receive a discount at the National Air and Space Museum's Wright Place restaurant, open 11:30 A.M. - 3 P.M. daily.

Smithsonian museums are generally open 10 A.M. - 5:30 P.M. daily, except December 25. Hours at the National Zoo are 10 A.M. - 4:30 P.M. daily for buildings, 6 A.M. - 6 P.M. for grounds.

SMITHSONIAN WEBSITE

The Smithsonian home page on the World Wide Web (www.si.edu) offers on-line information about exhibitions, collections, events and products.

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Azeri men finger prayer beads outside a mosque in Baku, Azerbaijan, where the world's next great oil rush is just getting under way.

Waiting for the Boom

Oil

BY RUTH DANILOFF

PHOTOGRAPHS BY ENRICO FERORELLI

THAT MORNING THE HONKING OF CAR HORNS ON Baku's Tolstoy Street, where we had rented a second-floor apartment, was even more deafening than usual. I stepped onto the balcony that juts out over the narrow street to determine the cause of the commotion. Down below, several of the women who lived in the building opposite were shoveling garbage into the roadway. The collection of unemployed men who usually congregated in nearby doorways clicking their worry beads stood around watching. The two brothers who ran the sidewalk kiosk where we bought our groceries had joined them along with our landlord, his young son and the owner of a small restaurant down the street.

The women appeared angry. So did the drivers of the cars backed up as far as I could see.

"The garbage has been sitting in the courtyard for three weeks," a woman wearing a floral head scarf called out, as she heaved a plastic bag of empty cans onto the pile. "It attracts rats and it stinks something awful."

"Why haven't they done the pick-up?" I called down.

"The city trucks have run out of gasoline!" She laughed. "And they say we have all that oil in the Caspian!"

The city of Baku, situated on the western shore of the Caspian Sea between Russia and Iran, is on the threshold of its second oil boom in a century, and the world's major oil companies have descended on Azerbaijan's capital to open up offices and sign contracts to explore and develop both offshore and onshore fields.

The oil capital of the world in the late 19th century, Baku suffered physically and economically under Soviet rule. Westerners were told that the Baku fields were exhausted. Only recently, with the independence of Azerbaijan and other Soviet republics, has modern technology been used to estimate the vast untapped wealth of the region. In addition to huge gas deposits, the Caspian basin may hold as much as 200 billion barrels of oil, reserves surpassed only by those of the Persian Gulf, and valued as high as $4 trillion.

Azerbaijan, a pro-Western, predominately Shiite Muslim country, has already signed nine deals, representing $30 billion in investments, including the $8 billion "Contract of the Century," a 30-year agreement between the Azerbaijan government and the Azerbaijan International Operating Company (AIOC), a Western-led consortium of oil companies. Last November, U.S. Secretary of Energy Federico Peña was in Baku to help celebrate the first flow of AIOC oil, a trickle that in a few years should become a flood of oil from the Caspian, "ensuring," said Peña, "that no nation will be dependent on any *one* region" for its energy supply.

Whatever happens between now and the year 2003, when the AIOC hopes to have the main export pipeline completed, this much is clear: political, economic and cultural life in Baku will be driven by oil. "Let's face it," one woman tells me, "Baku is hostage to the oil. Everything that happens to us has to do with oil."

The Caspian basin has been known for its oil since pre-Christian times, when the Zoroastrians built temples around the "eternal pillars of fire" that shot out of fissures in the rocks around Baku—actually, flammable gas associated with the oil deposits. During Alexander the Great's conquest of Persia in 331 B.C., his tent was lit by vessels filled with oil from the region. Marco Polo, on his travels along the Silk Road in the 13th century, commented on a "fountain" flowing with oil, good for burning and for treating diseases of the skin, but not for cook-

Inset, left: Fires illuminate a Zoroastrian temple on the outskirts of Baku. Above: Relics of the Soviet era, oil rigs and derricks create a surreal landscape surrounding the city.

ing. In the Middle Ages, merchants transported the oil by camel to the Middle East and India.

The association with oil lies so deep in the unconscious of the people of Baku that 2,500 years after the time of Zoroaster, some still celebrate Noruz, the Azeri New Year, by leaping over fires set in the streets.

"For us fire is something different; it is alive," one student told me as we stood watching young boys in high sheepskin hats prance around the fire to the beat of drums. "We jump over the fire to cleanse ourselves for the coming year, to get rid of all our impure thoughts."

Baku's challenge is to survive until the oil—and money—starts flowing in earnest. The city cries out for attention. The infrastructure is in shambles and the streets are full of craters. Several times a week we lose the electricity in our apartment. The gas pressure fluctuates, and sometimes nothing comes out of the faucet when I turn it on. The magnificent palaces, mansions and mosques built by the 19th-century oil barons, and turned into communal apartments and warehouses by the Soviets, are in desperate need of restoration. Of the one million refugees from Azerbaijan's war with Armenia over the western region of Nagorno-Karabakh, 70,000 have fled to Baku, straining the city

Freight cars house some of the 70,000 refugees who fled to Baku from the war with Armenia in Nagorno-Karabakh. Some analysts think oil deals may help settle the dispute.

services and creating social tensions.

Neftyanyye Kamni (Oily Rocks), the gigantic oil platform some 30 miles out in the Caspian, has become a leaking, rusting hulk. A 48-mile-long grid of man-made islands connected by 125 miles of roadway, it once boasted nine-story apartment blocks with shops, schools and movie theaters, and housed 2,500 workers. It's still producing oil, but 30 miles of causeway have disappeared into the sea. One Western oilman calls it the biggest piece of junk he's ever seen.

Yet for all its afflictions, Baku is a booming city compared with the way it was in the summer of 1995 when I visited it for the first time. And in spite of the influx of refugees and the city's high unemployment rate, crime is almost nonexistent—that is, if you don't count corruption, which is as much a part of city life as the warm flatbread sold on the street corners.

"It's easy to get run over by a car in this city," says Fuad Akhundov, a self-taught expert on Baku architecture, as we stand outside the art museum waiting for a break in the stream of fast-moving traffic, "but you won't get mugged. You can walk in the streets till midnight and be safe." One reason for the lack of crime is what he calls the "shame factor." "If I was to steal something or hurt someone, it would bring such shame on my family, then no one would want to marry my sister," he explains.

Most goods are available now, too. "When I first came here I had to buy everything abroad, which was expensive," says the manager of Exxon's Baku office, John Hoholick, who has lived in Baku for three years and loves the city. "Now, if I need a new computer, I can buy it around the corner. If I need a hard drive, I can have it installed in half an hour."

Oil company executives like to quote studies that claim that for every dollar invested in the oil industry, two or three will come back to the country in goods and services. Already cafés, restaurants, bars, luxury hotels and casinos have opened to serve the overseas oil workers and specialists, who can earn from $400 to $1,500 per day. British Airways, KLM and Lufthansa have increased their direct flights from Europe. Kiosks and stores are mushrooming under the Ottoman balconies, and foreign businesses are turning houses once owned by oil barons into elegant offices and apartments.

When the local people read about the oil deals and the promised riches, they tend to shrug. The black gold can also be a curse, they say. True, oil

had made Baku into an architectural masterpiece, but it had also contributed to war, ethnic strife and pollution. Pessimists point to economic studies, like a recent one by Harvard's Kennedy School of Government, which indicate that countries rich in natural resources have difficulty developing a normal market economy. Either too much money is invested in the oil sector, or it goes into the pockets of the rich.

"We won't see much money from our oil," said the owner of a small kiosk on a Baku side street as he arranged his bottles of Coke and mineral water on the potholed sidewalk. "All those 'New Azeris' who drive around in Mercedes will take it."

Yet even cynical observers who view the oil companies' community programs as a public relations ploy admit that the companies have given the city a boost. Under the AIOC's contract, eventually 90 percent of its work force will be hired locally, which entails providing training programs in areas such as computer skills, English and accounting. By giving money to local orchestras, ballet companies and galleries, the oil companies have helped reverse the exodus of artists and performers that started with the collapse of the Soviet Union and the resulting economic hardships.

"We are here for the long term and we want to be part of the community," says Paul Hill, manager of Amoco's Baku office, whose immunization program has contributed to the elimination of childhood diphtheria and polio in the country. Even Lukoil, the mammoth Russian oil company, not known for its philanthropy, has helped restore Baku's Russian theater and Orthodox church and is revamping sections of the city's antiquated telephone system and introducing gas stations. The stations have won kudos for not watering down the gas.

Long before the oil companies began beating a path to Baku, the region's strategic location at the crossroads of Europe and Asia, of Islam and Christianity, attracted some of the world's most notorious warriors: Alexander the Great, Timur and Peter the Great sent armies to the area. "Our culture has so many different layers: Zoroastrian, Greek, Christian, Muslim, Russian. From both East and West everything is mixed in together," says Sara Nazirova, an art historian and writer. "It is unique."

In fact, the city's origins are as mysterious as the massive tower that rises eight stories inside the Icheri Sheher, the medieval "inner city" overlooking the sea. Archaeologists formerly dated the Maiden Tower to the 12th century A.D., based on inscriptions found on its walls, but now believe it dates back to pre-Christian times. Explanations of its original purpose include use as a fortress, a refuge for a princess fleeing the incestuous advances of her father, or perhaps a Zoroastrian fire temple.

In the 7th and 8th centuries the Persian Zoroastrians were displaced by Muslim armies, and later the Seljuk Turks ruled the region. But Persia maintained its hold, until Russia cast a covetous eye on the light-giving oil of Baku. In 1723, Peter the Great ordered the city taken. It was restored to Persia 12 years later, but in 1828, as a settlement of the Russian-Persian War, the Baku Khanate's northern sector—modern-day Azerbaijan—was ceded to the Russian Empire. (Today, as a result of this division, about 7 million Azeri Turks live in Azerbaijan and some 20 million live in Iran. In the past the separation invited political conflict as Iran tried to export its Islamic fundamentalism into secular Azerbaijan.)

It wasn't until the late 19th century that Baku became the "Black Gold Capital" of the world, its fountains of

The Nizami Literature Museum in Fountain Square used to be the Metropol Hotel, Baku's most fashionable hostelry at the turn of the century. The Soviets remodeled it in 1941.

crude "the prize" in what Daniel Yergin in his book of that name calls "the epic quest for oil, money and power." Baku's oil industry had languished as the monopoly of imperial Russia, but in the early 1870s the Russian government opened the oil fields to private development, and the rush was on. With luck and money to lease a plot from the government, anyone could become a millionaire overnight.

The population exploded as the lure of instant wealth drew people to the city from Europe, Russia, the Middle East, Armenia and Georgia. Gushers spewed unchecked while workers wading waist deep in rivers of oil struggled to channel it into holding lakes before it dissipated. So much black smoke belched over the eastern part of Baku, where most of the refineries were, says Yergin, that the area was known as Black Town and one visitor compared life there to "confinement in a chimney-pot."

By the end of the century, the city boasted 3,000 wells and was producing half the world's oil. The sleepy fortress town had been transformed into a cosmopolitan city.

Among the Europeans who contributed to Baku's cosmopolitan character were the Nobel and Rothschild families. "Baku oil helped fund the Nobel prizes," says Fuad Akhundov. "It is something everyone tends to overlook." Villa Petrolea (opposite), the mansion and park built by the Nobels, stands today amid a wasteland of rusting storage tanks, smokestacks and idle oil equipment, crying out for a new age of oil barons to restore it to its former splendor. Not far from the mansion are the original kerosene plants and refineries of the Nobel Brothers Petroleum Producing Company, which modernized the Baku oil industry and, along with the Rothschilds' vast operations, squeezed John D. Rockefeller's Standard Oil out of Russia and challenged the American giant for the markets of Europe and Asia.

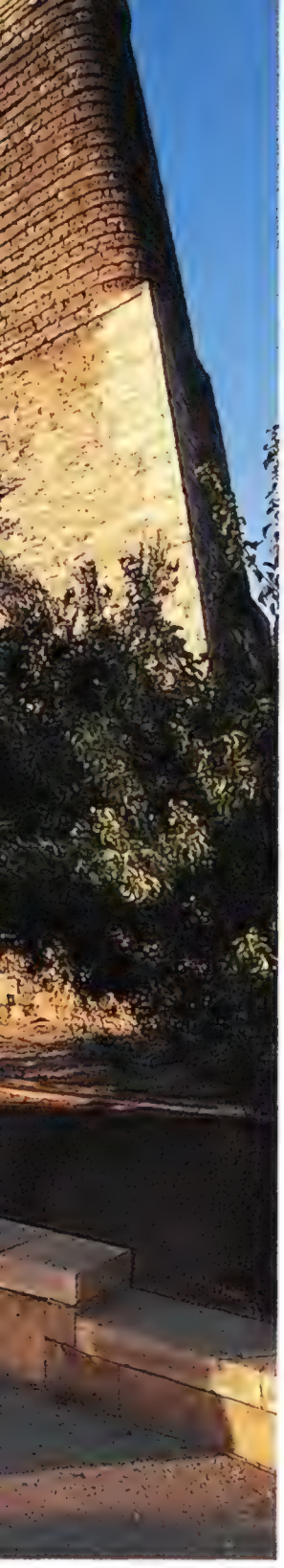
Local oil barons also left their stamp on Baku, vying with each other to build palaces, hospitals and theaters. One benefactor was Zeynalabedin Taghiyev, a boot-maker's son who founded several educational institutions, including the first school for women in the Muslim world. To quell opposition from the czarist government and the conservative clergy, Taghiyev named the school for Empress Alexandra of Russia and elicited testimony from leading theologians that nothing in the Koran prohibited education for women.

When Baku oil barons returned from abroad, they commissioned architects to build replicas of palaces they had seen on their travels. Soon the foreign architects began incorporating Oriental styles into European designs. Ottoman balconies, narrow arches, columns and windows with ornamental details on the pinnacles, found their way into Gothic, Renaissance or classical facades.

Oil also financed the building of parks in Baku. Arid soil and hot summers made the greening of the city a mammoth undertaking, that is, until the mayor issued a decree requiring ships entering the harbor to bring in soil in their holds. Several parks and gardens were created as a result. In the park at Villa Petrolea, the remnants of 80,000 exotic trees and plants imported from overseas, and nurtured by soil and water transported by Nobel tankers, now stand dead or dying from neglect and pollution.

By the early 1900s Baku had become a hotbed of worker discontent and a training ground for Bolshevik revolutionaries. The young Joseph Stalin organized strikes among the oil workers and printed and distributed Lenin's paper, *Iskra*, out of a basement in the city. Following the massacre of demonstrating workers in St. Petersburg on Bloody Sunday in 1905, oil workers in Baku went on strike again. Ethnic conflicts ensued and oil production fell as wells were set afire and their owners murdered or forced from the country. Azerbaijan declared independence in 1918, following the 1917 abdication of the czar, but when the Bolsheviks gained control in Baku, the oil barons fled. Independence came to an abrupt end in 1920 with the arrival of the Red Army, which advanced on Baku in pursuit of oil.

The 70-room neoclassic mansion once owned by the father of 91-year-old Sara Ashurbeyli covers a whole block of a tree-lined street in the cen-



Black gold could help preserve (clockwise from left) the Maiden Tower, symbol of Baku; "Oil King" Ludwig Nobel's Villa Petrolea; Taza-Pir Mosque, built by oil heirs.

ter of Baku. "My father was a rich industrialist. We had everything, maids, tutors," says Ashurbeyli, a leading Azeri historian who now lives in a cramped two-room apartment nearby with her two sisters and six cats. "Every year we went to Germany to the baths. Then one day the Bolsheviks arrived, threw us out, confiscated all our belongings and destroyed everything inside." She and her family escaped to Istanbul in 1920. Six years later they made what she describes as their greatest mistake. They returned to Baku. Her father was arrested in 1935 and sent to Siberia, where he was later executed.

By the start of World War II, Baku had become the heart of the Soviet oil industry and, thus, of the Russian war effort against the Germans. In the early 1940s its wells produced more oil than ever before or since. Much of it was thanks to women, says Solmaz Hadjieva, president of the Society of Women in the Oil Industry of Azerbaijan. "The men were at the front, and the women did everything, working at sea, in the refineries."

Hitler, obsessed by the oil fields' strategic importance, was determined to take them. When his generals presented him with a birthday cake in the shape of the region, he took a mouthful out of Baku. The Allies even contemplated bombing the oil fields to keep them out of enemy hands. As the Germans closed in, engineers began plugging the wells and making plans to dynamite them. In the end the Soviet Army stopped the German advance at Mozdok, just 600 miles to the north.

After the war Baku's oil production plummeted. Many wells sealed during the war were impossible to restore. The Soviet government decided to focus on Siberia, telling everyone that the Azeri fields were exhausted: a claim that was far from the truth. So, when Azerbaijan became an indepen-

Top: In the 1880s, gushers yielded 43 percent of Baku's oil, which was stored in "oil lakes." Above: Neftyanyye Kamni, an offshore drilling platform, was built in the 1950s.

dent republic in 1991, an event unforeseen in the Soviet strategy, the new country owned one of the largest known offshore reserves in the world.

Baku's second oil boom kicked off on September 20, 1994. At noon on that day, the Contract of the Century, one of the world's biggest oil deals ever, was concluded after three years of negotiations. Not since the first oil boom had so many powerful people come to Baku. Streams of black limousines drew up at the entrance to the Gulistan Palace, a cavernous Soviet-era building overlooking the sea. Foreign ministers, energy ministers, ambassadors and legal advisers filed past the soldiers cradling machine guns and into the building. Inside, under the crystal chandeliers, fluttered the pennants of oil companies representing seven nations: British Petroleum; Statoil of Norway; Britain's Ramco; Amoco, Unocal, Pennzoil and McDermott International from the United States; Turkish Petroleum; Russia's Lukoil; Delta-Nimir of Saudi Arabia; and the Azerbaijan State Oil Company, Socar. (Since then, Exxon and Japan's Itochu have joined the consortium.) The contract called for the development and exploitation of three huge offshore fields, holding an estimated four billion barrels of oil.

One of the guests who jetted in for the ceremony was Steve Remp, CEO of Ramco. The third-generation oilman from Wyoming was the first person to convince Western oil companies to take Baku seriously. When he initially visited the city, in 1989, he was also one of the first Western oilmen to have done so in 70 years. By then, the Soviet oil industry was in desperate shape.

"At the time the Ministry of Energy had fixed ideas about who they would be letting into the Soviet Union, and those companies were being directed very carefully to western Siberia," Remp told me at his company headquarters in Aberdeen, Scotland. After scouting out Siberia, Remp concluded that the Siberian fields were too crowded for a small oil service company, which Ramco was at that time. An Azeri friend suggested Azerbaijan. "All during this period major oil companies had no interest. They were told that it was all washed up in Azerbaijan. Ramco was too small and no one took much notice of what I was doing."

Remp found the engineers in Baku to be highly skilled. Their technology was another matter. "The Soviet Union had pulled every ounce of blood out of the system. The communications of the Azerbaijan State Oil Company were very primitive. Their sole link to the outside world was one telex machine that only worked one or two days a week."

The Azeris, who by this time were beginning to flex their muscles, saw

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Above, from left: Sisters Adelya, Sara, 91, and Maryam Ashurbeyli lived in a 70-room mansion before the revolution. Right: Sara (standing) and sisters, in Karabakh dress.

Remp as someone who could help them. They trusted him enough to give him data on several fields. "When we started to decipher the Soviet information," says Remp, "our eyes began to pop out of our heads. Basically what they were showing me was the tip of the iceberg."

The signing of the Contract of the Century, and the others that have followed, is nothing short of a miracle, considering the number of countries and companies involved, all with political and economic agendas in one of the world's most strategically important regions. The struggle for the oil of the Caspian basin has been dubbed the "Great Game," a phrase immortalized in Rudyard Kipling's *Kim*. In the 19th century the "Great Game" referred to the long and often covert war fought by Britain and Russia for control of the Caucasus and Central Asia. At that time the prize was influence, land and resources. Today it goes by the name of oil.

Round Two of the Great Game is no less Machiavellian. Russia, which considers the Caucasus and the former republics of the Soviet Union to be its backyard, pressured Azerbaijan to annul the Contract of the Century, which originally was to be signed in May 1993 when then President Abulfaz Elchibey, a pro-Western nationalist, was in power. Just before the signing, Elchibey was deposed in what was most likely a Russian-backed coup. Iran, which was eased out of the AIOC following American objections (it now has stakes in two other consortiums), has aligned itself with Russia in a dispute, yet to be resolved, over the status of the Caspian Sea. Russia and Iran claim the Caspian is a lake whose oil and gas must be shared equally among the littoral states: Azerbaijan, Kazakhstan, Turkmenistan, Russia and Iran. Azerbaijan, Kazakhstan and Western nations that have already invested in offshore exploration claim the Caspian is a sea, with each country owning the underwater resources off its own coast.

Extracting the oil is child's play compared with the problems of transporting the riches. The nation with a gas or oil pipeline crossing its territory stands to gain huge transit fees, not to mention political leverage. In August 1995, at a secret meeting in Houston, Texas, the members of the AIOC thrashed out a pipeline compromise. Two temporary routes were announced: a northern route from Baku to Russia's Black Sea port of Novorossiysk and a western route through Georgia, bypassing Russia, to Supsa, also on the Black Sea.

The next hurdle in the Great Game is the selection of the route for the main export pipeline, which should become operational in five to eight years. A map of the proposed pipelines looks like a spider's web of national interests crisscrossing most of Central and Western Asia and the Caucasus, and extending into Eastern Europe. Russia is lobbying for the northern route from Baku, through Chechnya, to Novorossiysk. Turkey prefers a southern route from Baku to its Mediterranean port of Ceyhan, bypassing the narrow and heavily trafficked Bosporus Strait; tankers passing through the Bosporus invite ecological disaster, Ankara points out. (In recent months international oilman Roger Tamraz made headlines when it was learned that he had contributed $300,000 to the Democrats in an effort to gain White House support for his plan to build an independent pipeline from the Caspian to the Mediterranean by way of Armenia and Turkey.)

Azerbaijan would prefer a southern pipeline to maintain its independence from Russia. Meanwhile, some Western companies are lobbying Capitol Hill for a change in America's Iran policy on the grounds that a pipeline through Iran to the Persian Gulf makes the most economic sense. The United States wants to maintain its sanctions against Iran, and desires good relations with Russia, but favors the Baku-Ceyhan route for the first major export pipeline. A bumper sticker on a filing cabinet of the Commercial Office at the American Embassy in Baku reads: "Happiness is Multiple Pipelines."

Baku's oil boom has gained such momentum in the past two years that some people think it is out of control. Paolo Lembo, the former United Nations Resident Coordinator in Baku, fears that without urban planning this unique Eurasian city with its array of architectural styles will be lost. To start with, he would like to see the Icheri Sheher listed with UNESCO as a world cultural monument before its narrow winding streets and Persian-style houses are overrun by cars and office buildings such as the palatial new Lukoil headquarters. "Unfortunately, there is no money, and before we can take care of the monuments we must feed all the refugees," Lembo says.

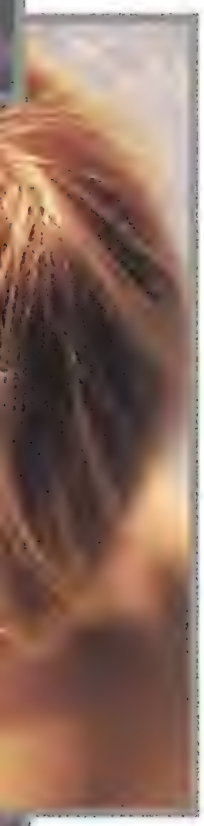
Optimists, like Terry Adams, the outgoing head of the AIOC, view the presence of the oil companies in Baku as akin to a mini-United Nations. Rather than creating instability, the companies could bring peace to a region plagued by political and ethnic conflicts. "All the major capitals are represented: London, Paris, Washington, Ankara, Rome, Moscow . . ." says Adams. "Everyone is involved on a commercial basis and this has allowed a lot of what has taken place here in Azerbaijan to happen."

Others, like Takhir Amiraslanov, an Azeri chef who has put his country's cuisine on the menus at recent international cooking competitions, hope that Western imports—fast food, rock music, crime and the emphasis on money—will not undermine the ancient traditions of Azerbaijan, such as hospitality, the family, love of music, or drinking tea with friends.

"In the West, you say that time is money," he says, holding up a glass of tea to the light to show me the correct golden color for the liquid. "Now we are beginning to think that if we have money, then we will live well, but that isn't true. You need money, but it is not the aim. Time is life. Living is the aim."

Ruth Daniloff profiled Russian sculptor Vadim Sidur in December 1994. Enrico Ferorelli shot last month's Ferrari story.

With their high spirits—and fashion—young women in downtown Baku evoke the hopeful mood of Azeris as the oil boom promises to restore the city to its former grandeur.



Solving the Aging Puzzle

EVOLUTION MAY TELL US WHY LIVING THINGS—INCLUDING HUMANS—AGE AT SUCH DIVERSE RATES

STEVEN N. AUSTAD IS LUCKY TO HAVE lived long enough to be an expert on aging. Before becoming a scientist, he was an animal trainer in Hollywood. If you study reruns of the old television series *The Bionic Woman*, you can catch a glimpse of him in one episode. He's the one in a skirt, wig and heels, shrieking and rolling around on the ground with a snarling, full-grown lion on top of him. "The lion got kind of carried away and really smacked the hell out of me," Austad recalls. "The director said, 'That was great. Let's do one more.'"

While wrestling with semidomesticated wildlife, Austad was routinely clawed, crushed, bruised and bitten. By the time he returned to school to study biology, all his injuries had healed. He knew they would—he was young. But that unremarkable ability of living tissue to renew itself, at least for a while, fascinates Steve Austad today more than lions, tigers and bears ever did. He and other gerontologists are now seeking an answer to the central paradox of aging: Why can't we keep healing ourselves? Why do we inevitably decay as we grow older?

"To me, there's no obvious reason why we should fall apart," says Austad, now 51 and a professor of zoology at the University of Idaho. Most people, he concedes, probably aren't terribly puzzled that living things deteriorate over time: Don't toasters and transmissions wear out with use? But organisms are not machines. They're composed of cells that can repair themselves and split in two, forming perfect copies. "So," he asks, "why don't they just keep doing it?"

Once a scientific backwater, gerontology today is a hotbed of research into why things go increasingly wrong as organisms get older. The goal of most aging research isn't to extend the human life span to 150 years. Rather, the idea is, ultimately, to devise ways to make the final decades of people's lives more active. A good deal of work focuses on heart disease, cancer and Alzheimer's disease, all of which are overwhelmingly afflictions of the aged.

In recent years, the field has been dominated by researchers zeroing in on errant DNA copies, injurious brain-chemical levels and suspicious-looking chromosome tips. Most of these people work on snippets of tissue from rats and mice, fruit flies and nematodes. In so doing, they have amassed a huge volume of details about aging in these species and, by extension, in people. Yet an overall understanding of the way those details fit together in living animals—the why of aging, not just the how—has remained elusive.

Among gerontologists, Steve Austad stands out: he is an unapologetic animal lover intimately acquainted with all manner of fauna,

BY DOUG STEWART ⁝ PHOTOGRAPHS BY BRAD TRENT

not just lions but opossums, spiders, wrens and parakeets, too. As an evolutionary biologist, he's concerned with how environment shapes an animal population's life span. Given the right conditions, he argues, natural selection may have already found life-prolonging secrets that human researchers are missing—and that they're unlikely to find in lab-mouse tissue. He's outlined his ideas in a new book, aptly titled *Why We Age.*

Biologists have advanced, by one count, some 330 different theories of aging to explain what happens.

Says Richard Sprott, associate director of the National Institute on Aging: "Many molecular biologists and molecular geneticists have never seen the chunk of DNA they're looking at walking around on two or four feet. Now we're beginning to see a reemphasis on integrating these pieces of biochemistry back into whole organisms, and Steve Austad, I think, will be one of the leaders in the development of that new science."

When I visit Austad's home in the wooded hills outside Moscow, Idaho, I can see right away that animals here are more than an abstract source of cell cultures. He and his veterinarian wife, Veronika Kiklevich, and their two young daughters share their home with a whole geriatric menagerie. Most of the animals are ailing castoffs that Dr. Kiklevich couldn't bear to put to sleep. In addition to an assortment of cats, dogs and parrots scattered about the house, a red squirrel with a malformed jaw resides in the laundry room. Until recently, the collection included an orphaned coyote, a three-legged mutt and a Rhodesian Ridgeback with a congenital liver problem.

Austad has been painfully aware that different organisms age at different rates ever since, as a youth, he watched his dog Spot mature, turn feeble and die before he himself was old enough to vote. Biologists have advanced, by one count, some 330 different theories of aging to explain what happens. "Many of them were disproven long ago, but some people just won't let go," Austad says. One early favorite—which still exists in various forms—was the rate-of-living theory. This is the idea that life span is somehow directly tied to metabolic rate: if you live fast, you die young. The supporting evidence is everywhere. Nervous little mice breed in a couple of months and die not long after, while a turtle's life of lethargy can last 150 years. An arctic clam, which barely *has* a metabolism, may live to be more than 200.

"The rate-of-living theory has always made intuitive sense to people," Austad says. Unfortunately, he adds, it doesn't hold up. Consider the hummingbird: "Small ones can have 1,200 heartbeats a minute—you can hardly count them. But hummingbirds in the wild have been reported to live for 14 years."

Nevertheless, as far as Austad knows, no one studies aging in hummingbird cells. The usual test subjects are rats and mice, or short-lived invertebrates like fruit flies, which usually live only a few weeks. "Virtually all research on aging is done with animals that aren't very good at it," Austad says, warming to one of his favorite topics. "Even lab mice, safe from predators and disease, only live two or three years at best. My idea is, let's find something that's good at aging and then figure out how they do it." Like whales, elephants or parrots. Or flying squirrels.

So it is that I find myself early one crisp, cold morning setting traps in the pine woods behind Austad's house. For bait, we're smearing large dabs from a jar of peanut butter. "I've always been interested in flying squirrels because they're so long-lived," Austad tells me as he hammers a lightweight aluminum box as high as he can reach on a lodgepole pine. For one reason or another, they're slower to mature, age more gradually and die later—more than 50 percent later—than do ground squirrels the same size. "Plus I just think they're neat. When I was in Indiana," says Austad, who received his PhD from Purdue, "I used to watch them parachuting around from tree to tree."

The next morning, we check the traps and find all 20 empty. I'm crestfallen, but Austad is as upbeat as ever. "I just love going out and setting traps and seeing what I've got," he says happily. He is, I suspect, a trapper at heart.

Another trapping foray gone awry is what drew Austad to the biology of aging in the first place. He was working in a remote patch of savanna in Venezuela in the early 1980s with a colleague, Mel Sunquist. They were studying wrens and crab-eating foxes, respectively. Or trying to. Sunquist's traps kept filling up with opossums. Being realists, the pair began studying opossum reproduction instead (SMITHSONIAN, June 1993). During their fieldwork, they noticed that the animals, though incredibly prolific, were prone to a curious malady: they grew old at a pathetically rapid pace. "I'd catch an opossum, and she'd look fine," Austad recalls. "Six months later, she'd look 100 years old—she'd have cataracts, a weak, unsteady gait; she'd have lost weight. I thought, 'What is going on here?'"

Austad soon switched gears again. He began looking for an evolutionary reason why opossums die young. What makes opossums (even those removed from the dangers of the wild) die in two, maybe three years, while porcupines,

All is quiet in the University of Idaho laboratory where Steven Austad keeps his animals. But there was a time when he was smacked around by lions as a Hollywood animal trainer.

Graduate student Janice Siegford and Austad look in on some aging parakeets. How do the birds live ten times as long as mice despite having much higher metabolic rates?

only slightly larger and similar in metabolism, can easily live to be 20? The answer, Austad realized, may stem from opossums' very haplessness. While porcupines have quills, opossums are virtually defenseless (SMITHSONIAN, November 1989). To predators, the slow-moving, easy-to-spot marsupials are lunch on four feet. Austad suspects that most opossums have an inherited trait that causes them to age rapidly starting at 2 or 3. In the wild, an opossum would be lucky to dodge foxes or owls long enough to be affected by it. Thus, there is no evolutionary pressure to remove the trait from the gene pool. A porcupine, meanwhile, has quills to keep its enemies at bay and so lives on to produce children year after year. A porcupine carrying a gene that causes early death has fewer offspring than its peers do, so the gene is gradually crowded out of the gene pool. The cumulative result: opossums that manage to survive predators age quickly, while porcupines don't.

The longest-lived animals tend to have some special protection from accidental death, Austad points out. Turtles and clams have shells. Bats and birds (and, after a fashion, flying squirrels) have wings. Humans have size and intelligence. But fast-aging, quick-dying animals like opossums

and mice have no special protection. They have evolved the ability to breed early and plentifully, before an accident kills them.

The fundamental causes of aging offer trade-offs: advantages early in life at a cost of damage later.

All this is in keeping with the evolutionary theory of aging, proposed by the English biologist Peter Medawar and others in the 1950s but largely overlooked by most gerontologists until recently. "The basic idea is that the force of natural selection has great power to favor good genes and act against bad genes, as long as those genes have their effects when you're young," Austad says. "If we all had genes that killed us on our 100th birthday, it wouldn't matter very much. On the other hand, if there was a death gene that switched on at the age of 11, almost no one who carried it would live long enough to reproduce." The gene would rarely be inherited; it would likely appear only as a mutation. Where Austad's work becomes interesting is in figuring out what happens between these two extremes.

Austad made news in the gerontology world when he took an innovative approach to the aging puzzle in opossums. A hurdle for the evolutionary theory of aging, he knew, was the difficulty of comparing aging rates across species—there were too many differences from one species to another. Austad got around this with an ingenious experiment using two populations of the same species, the Virginia opossum. "My idea was that if an opossum population had existed long enough in a place without the usual hazards, they should be longer-lived," he says.

After a yearlong search, he found opossum heaven: Sapelo Island off the coast of Georgia, a place that has few predators and plenty to eat. He loaded up with bug spray and animal traps and began catching, radio-collaring and releasing opossums there. His hypothesis bore out: Sapelo opossums lived up to 50 percent longer than the mainland opossums he had trapped in South Carolina. The island opossums, furthermore, had smaller litters and had them later. Austad describes the evolutionary process in terms of energy expenditure: "Over time, instead of investing all their energy in producing offspring quickly and copiously, almost suicidally, they've invested in better immune systems and other ways of keeping themselves healthy longer." In so doing, they've delayed their collective rate of aging. Austad is now working with tissue samples from the island and mainland opposums to prove that the difference in life span is, in fact, due to a difference in the opossums' genes, rather than external factors.

(There is, actually, a good deal of evidence that longer life and longer fertility are genetically linked. In many species, when individuals are selectively bred for late breeding, the offspring also prove to be extraordinarily long-lived. When individuals are bred for long life, the offspring turn out to have a capacity for breeding late in life. According to a recent study, the same may hold for humans: of a group of women born in 1896, those who made it to 100 were four times more likely to have had children in their 40s than those who died at 73.)

Austad's view of aging as a by-product of Darwinian strategy, not as a biological screwup, is a perspective he and others have been urging on their fellow gerontologists for some time. As part of this effort, Austad recently agreed to address a gathering of pathology researchers from the University of Washington, School of Medicine, where he has been an affiliate professor since 1993, after moving to the Northwest from an associate professorship at Harvard. From behind the wheel of his four-by-four during the five-hour drive from the Idaho panhandle to the Seattle area, Austad fills me in on his reasoning.

"A lot of people have seriously pursued the study of aging over the past 50 years," but when it comes to understanding the basic mechanisms of aging, he tells me, "they have made almost no progress. The reason is there hasn't been a coherent theory to focus the research." An investigator, says Austad, finds something that changes with age—skin elasticity, perhaps—and announces a new theory of aging in which skin elasticity figures prominently. "What evolutionary theory can do is tell us what to focus on and what not to waste our time on. It tells us that the fundamental causes of aging are things that offer trade-offs—advantages early in life at a cost of damage late in life."

We've barely left Moscow when we pass what is obviously a fatal car wreck, cordoned off by police. Though the area is lightly populated, the local news has been filled with stories of crashes all week. As we skirt the accident scene, I notice Austad isn't wearing a seatbelt. He shrugs it off. "I've done so many dangerous things in my life, I can't believe I'm going to die in a car crash."

Indeed, like wild mice and mainland opossums, Steve Austad has long been exposed to exceedingly high odds of accidental death. By the time he was 12, he'd climbed many of the major peaks in Oregon. In his 20s, he hustled pool for a living and later drove a cab in New York City ("any neighborhood, any time"), both being known mortality risks. He was once caught in the midst of a machete melee in the highlands of New Guinea, where he had come to track a native marsupial, the cuscus. He's been shot at by a friend's jealous ex-boyfriend while walking a lion, which some people would call double jeopardy.

A natural raconteur, Austad loves to tell lion stories—like the one about the time he sought refuge in an empty

cage while its usual occupant tried to force its way in while biting at his fingers. His lion-on-the-loose stories invariably reach a crescendo with, "That was it. He had me. I thought I was dead," accompanied by a high-pitched cackle. Now, with his lion escapades behind him, he and his wife are planning to take up skydiving.

For all that, Austad shows no sign of accelerated aging. Having just passed the half-century mark, he's still energetic and fast-moving, with the upper body of a collegiate wrestler. He denies that he himself frets about getting older. "To me, aging is an intriguing puzzle, not something to get morose about." All the same, his devotion to running,

Austad weighs a control subject, bred from wild mice, in his own "hungry mouse" experiment. He questions whether severely restricting diet really slows the aging process.

weight lifting and handball borders on the obsessive, and he plans his exercise with care. When running through unfamiliar terrain, he chooses the roads with the fastest traffic. "That way," he explains, "natural selection tends to eliminate those dogs that would chase me."

At the pathology meeting, Austad makes an enthusiastic plea for seeing things Darwin's way. He urges his listeners to think of these maladies not as isolated mysteries but as pieces of the overall aging puzzle, pieces that natural selection has actually favored for one reason or another. He points out that the risk of cancer—in which tumor cells run amok, dividing and redividing uncontrollably—seems to zoom upward with age in most vertebrate species.

"That suggests to me that there is some underlying reason for this and that it probably has to do with an early benefit that can become detrimental later in life." According to a basic principle of the evolutionary biology of aging, if a gene has two effects—a helpful one early in life and a harmful one later—natural selection would actively favor it, despite the damage it does to older individuals. Skin cancer, Austad suggests, is an out-of-control version of our skin's ability to heal its wounds. Leukemia, a cancer of the immune system, may be related to an early ability to fight off infection. Prostate and breast cancers, he suspects, are by-products of inheritances that give us an early advantage in siring and suckling infants, respectively.

Everyone in the room is familiar with the reigning paradigm of aging, often called the free-radical theory. This is the idea that cells over the years are damaged by toxic by-products of oxygen metabolism, a process that is necessary to life. Much aging research focuses on ways to destroy these molecules, known as oxidants or free radicals. Austad agrees that free radicals are probably a key factor in many age-related impairments, but he doubts they're the irreducible cause of aging. He points out that birds burn oxygen much faster than mammals their size, yet they usually outlive them dramatically. "If oxygen metabolism is causing all the problems that accompany aging," he asks, "then how does a bird avoid them?"

No one knows, but Austad and one of the conference organizers, pathologist George Martin, intend to find out. Swayed in part by Austad's arguments, Martin is leading a research team that, among other things, is investigating how birds like parakeets manage to stay healthy for up to 20 years. Austad has already supplied the "why": their wings let them escape an early death from predators, so nature has gradually favored those with inherited tricks for staying healthy during their bonus years. Now Martin is after the "how": what exactly these mechanisms are that help a bird's cells resist the usual ravages of age. "Birds have extraordinarily high metabolic rates, high body temperatures, and high glucose levels—all things that are supposed to be bad for you," Martin says. "It's clear that evolution has done something interesting here."

To aid in this effort, Austad recently set up a rest home of sorts for parakeets at his lab in Idaho. He's fired up by the project. "I guarantee you, if we find a bird chromosome that we can stick in a mouse that makes mouse cells resist damage from oxygen, it's going to be major news, and pretty soon everybody will be looking at birds."

Austad's first lab experiment in aging involved an even more unorthodox research subject, the bowl and doily spi-

der. He used it to test one of the best-known ideas about aging, which holds that animals that eat less live longer. "In nature, a spider will eat eight fruit flies a week," Austad says. "In one group, I fed each spider five flies a week. Another ate three. Another ate one. The longest-lived spiders ate one fly."

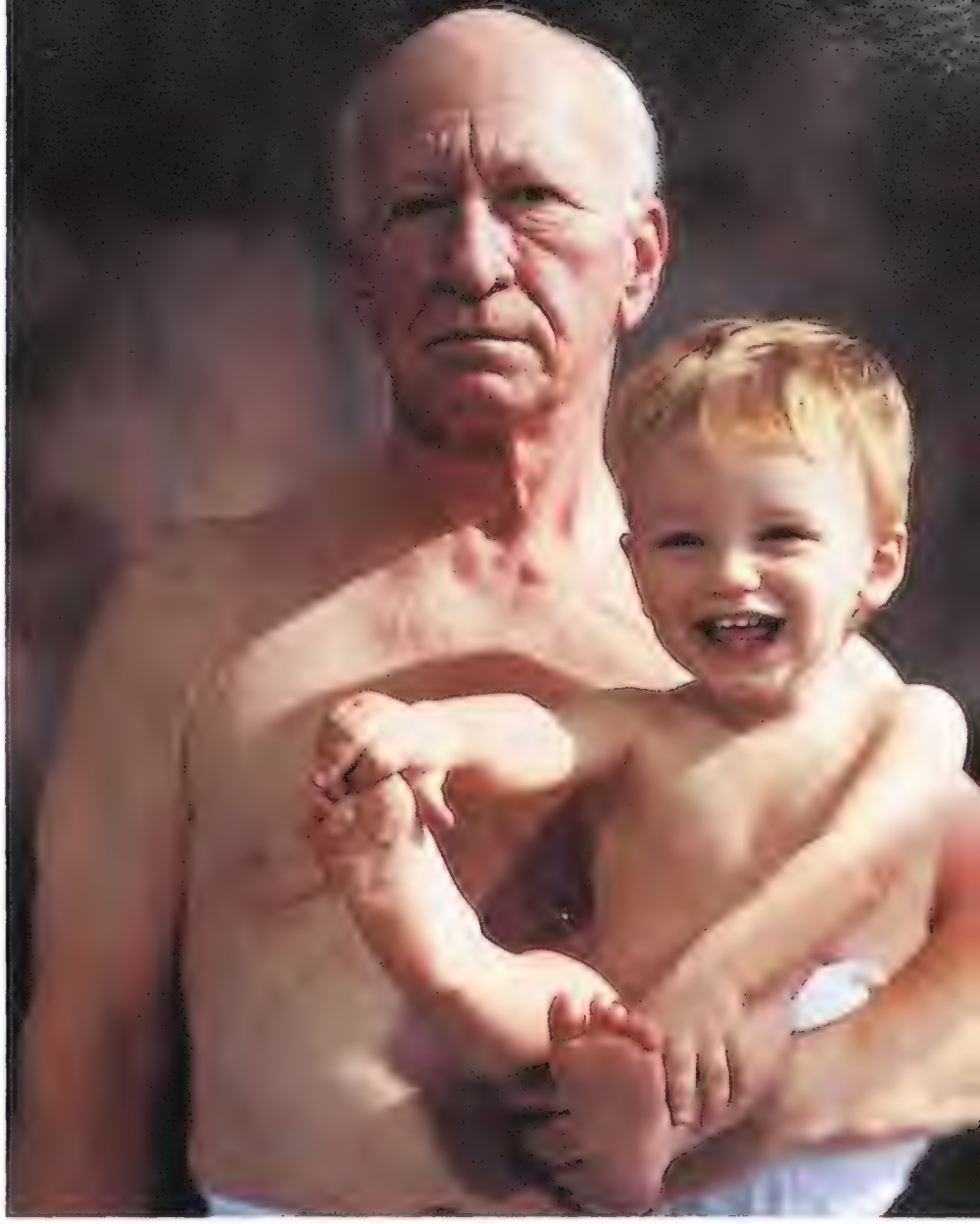
Nonetheless, Austad, unlike a number of other aging researchers, didn't promptly take up fasting. Diet restriction works fine with insects, he says, and has long been shown to work in lab mice, too. But Austad is still not convinced that it generally prolongs life in mammals. He suspects that the only reason commercially bred lab mice do well on a diet is that the pampered creatures normally overeat. The "diet" is closer to what they'd consume in the wild—and what their bodies are adapted to handle. Still, Austad can understand why diet-restriction experiments have caused a stir. "If you announced, 'Gluttony accelerates aging,' people wouldn't be nearly as interested as if you said, 'Diet restriction postpones aging.'"

Back in Idaho, I meet the test subjects in his own hungry-mouse experiment. Characteristically, his mice aren't like other people's mice. All of them are offspring of wild mice that his grad students trapped around town. They look fine to me as they scurry on treadmills and nip at their handlers. So far, however, the dieters among them have been dying sooner, rather than later.

Austad thinks that we can learn something about how to prolong life in mice, as in opossums, by studying how nature does it. Recently, he and a colleague, Richard Miller of the University of Michigan, trapped mice on a pair of remote Pacific islands, Pohnpei and Majuro. Mice on both islands, they'd learned, had been scampering freely for hundreds of years without major predators. "The mice there seem to have undergone a significant evolution. They're at most one-half the size of lab mice, and their litter size has also dropped." To Austad, these are telltale signs that a genetic trade-off has occurred: a reduction in growth and litter size for longer life. Contrary to the popular, and generally reliable, principle that larger animals live longer than smaller ones, Austad says, dwarf varieties of species consistently outlive their normal-size counterparts. As with his Sapelo Island opossums, he's guessing that natural selection has been breeding slow-aging mice on these islands for centuries. If these mice and their offspring do turn out to be markedly long-lived, he'll try to identify the genes responsible. With all that's known about the mouse genome, these genes could be a gold mine for biologists seeking genetic clues to mammalian aging in general, and human aging in particular.

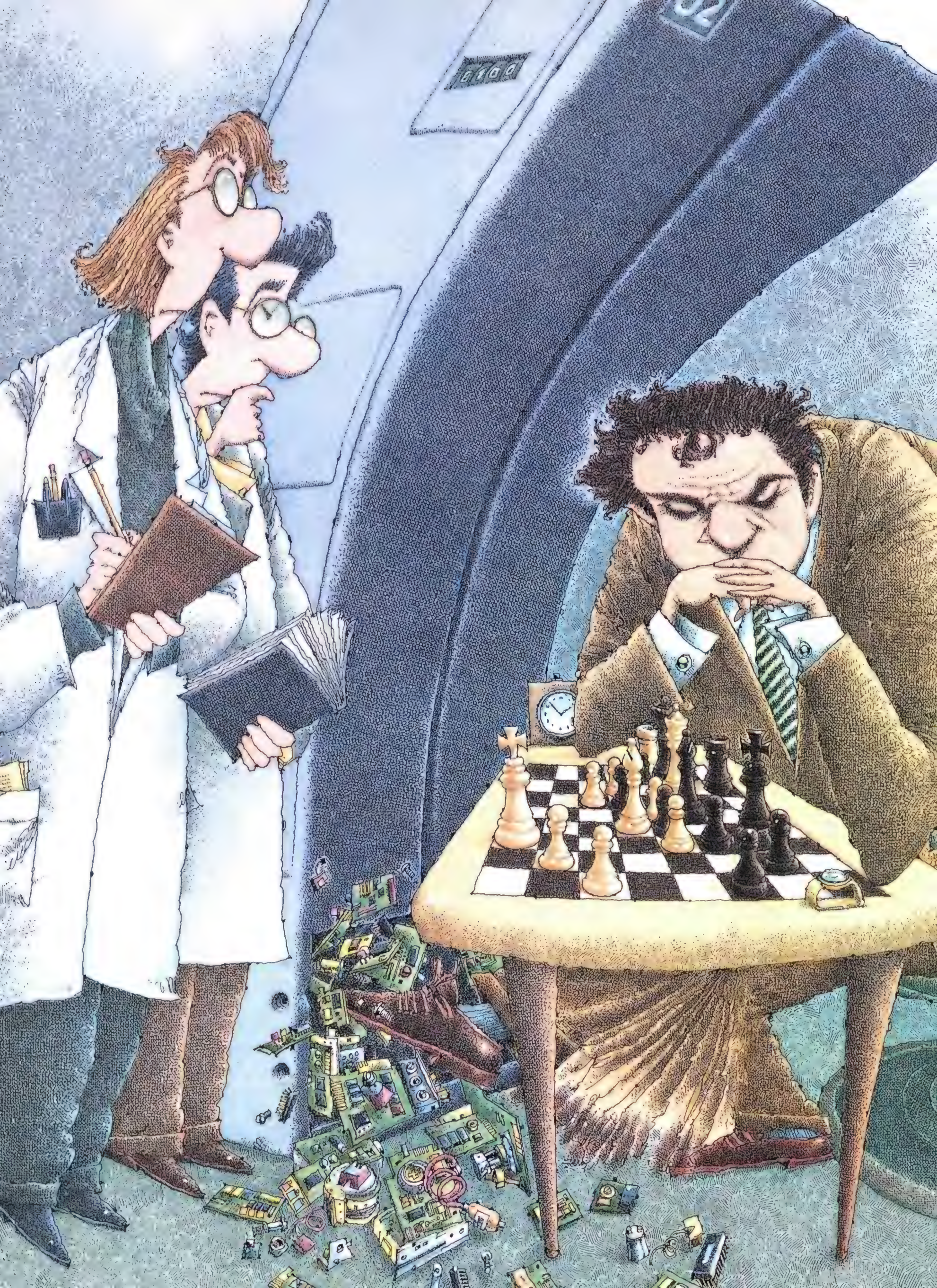
Austad has an affinity for long-lived plants as well as long-lived animals. Toward the end of my visit, he takes me in his truck to visit an isolated remnant of old-growth forest on a muddy ridgetop near his home. We wander in a grove of huge western red cedars that are up to 150 feet high, many of them leaning precariously. Others are already rotting on the ground. "You can see there are a lot of trees here with health problems," he observes. He whacks a lichen-covered trunk with a stick in a vain attempt to flush out any flying squirrels dozing inside. "But it's a wonderful place, isn't it?"

Some of the trees here are 300 years old and still putting out new foliage, he says. Austad doesn't expect humans will ever live half that long, tabloid claims to the contrary. "I could see it becoming common for people to live to be 100, but I'd be surprised if we could extend human life span much beyond that." Our best hope, Austad suggests, may lie in genetic engineering; by finding the mechanisms of slow aging that have evolved in other species, we may be able to produce gene therapies that stave off some of the ill effects of time. But the flip side of the coin is less promising: if aging is the result of evolutionary adaptation, as he believes, there are simply too many genetic culprits at work; we'll likely never fix them all.



Despite the insights other species may offer into the "why" of aging, Austad believes that science will have a hard time loosening evolution's lock on the human life span.

Doug Stewart wrote about negotiation guru William Ury in November. Brad Trent shot the October 1996 story on the Animal Medical Center.



In the Game of Chess

"Your Opponent Must Be Destroyed"

BY RUDOLPH CHELMINSKI ♕ ILLUSTRATIONS BY JEFF SEAVER

LAST SPRING, AFTER THE CELEBRATED CHESS MATCH IN WHICH IBM'S SUPERCOMPUTER Deep Blue defeated humanity's champion, Garry Kasparov, there was a certain amount of tut-tutting about the loser's angry reaction. It was inelegant of Kasparov, many suggested, to charge that the contest had been weighted in the computer's favor and to bluster that, given a fair chance, he would "tear it to pieces" in a rematch. "Sorehead," sighed the right thinkers. After all, chess is only a game, isn't it?

No, as a matter of fact, it is not. Chess is incalculably more than a game. It is a confrontation of wills that at the highest levels is closer to Armageddon than recreation. It's "a violent sport, played by powerful men and women," in the words of Fred Waitzkin, the author of *Searching for Bobby Fischer*, a book (and, later, a film) about a young chess prodigy. Let us be straightforward here: the men and women who make their living at chess do not exist on the same plane as you or I. They are different. And the Russian grand master Garry Kasparov, who has reigned as world champion for 12 years in a row now, is the most different of all.

I have a pertinent illustration for you. Come with me, if you will, a few years back in time to sunny Baku, then the capital of the Azerbaijan Soviet Socialist Republic, a place smelling of oil and shashlik and abounding in sand, dust, rusting derricks and abandoned machinery. At a beach on the Caspian Sea a few kilometers out of town, I was strolling one day with Kasparov, who had graciously invited me to his training camp for an interview. I had already noticed a particular feature of this handsome, muscular young man, but I hadn't yet identified it as a defining trait: when walking in groups, he always stayed half a step ahead of everyone else.

I would have done well to reflect more deeply about that, because it might have served notice that Garry was preparing to murder me. How about a swim, he suggested, and I innocently said "Sure." Big mistake. We struck out from shore in the general direction of Astrakhan, maybe 400 miles to the north, and damned if we wouldn't have kept on going, too, if I hadn't at last realized that I was guilty of a bodacious no-no: I was keeping up with Garry; I was competing with him. Already envisioning the headline (FAMOUS WRITER LOST AT SEA . . . Russian Also Perishes), I dropped my effrontery and fell back half a stroke. Only then did my overzealous companion consent to return to dry land.

Well, that's Kasparov, and that's chess, too. Nothing else is like it. No other contest is so maddeningly "simple"—a child needs only a few minutes to learn how the pieces move—and yet so beau-

tifully complex. No sport is as mesmerizing, no game, with the possible exception of the even older one of boy-girl, as enduringly engrossing. In backgammon, bridge or baseball, there is always a certain factor of luck. In chess there is none. The battle is utterly solitary: my wits against yours. The more a player advances into the game, the deeper and the more total becomes the involvement of his ego. The occasional player will be displeased to lose to someone whom he esteems less able than himself, but for the professional such defeats are intolerable affronts, cosmic tragedies that can tie the stomach in knots for weeks and then lie smouldering in the back of the mind, where long-term revenge is plotted.

The history of chess is replete with tales of extravagant behavior resulting from loss or the unquenchable thirst to win. There was the embittered Danish player who slunk back into a Copenhagen tournament hall one night and chopped the heads off all the queens on all the boards because in his match that day he had inadvertently touched his queen, was obliged to move it and consequently lost a few moves later. The great Alexander Alekhine once resigned a lost position by removing his king from the board and hurling it across the room, nearly beaning an innocent referee in the process. Aron Nimzovich, a brilliantly creative eccentric from Latvia who was fluent in German, was so infuriated at being outmaneuvered by a player of lesser stature that he sprang to the top of the table, scattering the pieces in all directions and shrieking: "*Gegen diesen Idioten muss ich verlieren?*" ("Do I have to lose to this idiot?")

The long-reigning Austrian champion Wilhelm Steinitz once spat upon the Englishman Joseph Blackburne for presuming to beat him. Blackburne ("Black Death," as adversaries knew him) is said to have replied by shoving Steinitz through a window. Steinitz, a monomaniac of truly cosmic credentials, wore himself out by the tensions of too many years of ill-paid chess combat. He ended up in New York emitting "electricity" (which, students of geophysics will be interested to know, he recharged by walking barefoot in vacant lots) and telephoning without benefit of a phone. Among other long-distance calls, he rang up God, challenging Him to a game and offering Him odds of pawn and move.

Once a defeated Danish player got so mad he chopped the heads off all the queens on all the boards.

So maddeningly complex are middle game positions, such are the razor's-edge risks of the slightest imprecision—one tiny move to one tiny square and the house all comes tumbling down—that it is common for masters to cogitate 30 minutes, an hour or even more on a single move. (All serious chess is clocked; tournament matches commonly allow each player 2½ hours for the first 40 moves, and a similar amount for the continuation, after adjournment.) The Russian grand master David Bronstein once set something of a record for indecision when he spent an hour pondering his first move as the clock ticked away. Who knows what was going on in his head? Might he have had Frank Marshall in mind?

Marshall was a tall, handsome American of theatrical appearance and affable nature, the very one whose memory is honored today in New York's Marshall Chess Club. As normal as you or I, he was an easy-going crowd pleaser who seemed far removed from the mysterious, pouty wiles of the middle Europeans, the arrogance of the English or the generalized emotional instability found among so many of his confreres. But the monomania was there all the same, simmering just beneath the surface. Marshall's particular nemesis was José Raoul Capablanca, the towering Cuban genius who dominated the game during the first decades of this century. In 1907 Marshall discovered, through solitary analysis at home, a new move that offered unexpected lines of attack in a familiar old position. Marshall held the move in reserve for more than ten years, never using it, although the key position frequently arose with garden-variety players. No: he was waiting for Capablanca. He finally sprang it on him in a New York tournament in 1917. Naturally, irony always wins in life, and what had to happen happened. Capablanca beat him anyway.

At these levels, chess can be as brutal and macho as a wrestling match, and a lot more honest. Whether facing a hulking lout or a bespectacled

little twerp, any halfway serious player who seats himself at the table of war is inwardly vibrating to Beethoven's four fate-charged notes—*da da da DUM*—as he replicates those ancient, cabalistic opening moves, P-K4 or P-Q4, and already, in some secret corner of his psyche, is preparing to stab one finger in the air like Dennis Rodman after a particularly outrageous slam dunk: I am Number One here.

"Chess is like life," the Russian Boris Spassky told some journalists in 1972, attempting to explain the mystical force of those 64 squares and 32 pieces as he was about to confront the American wunderkind Bobby Fischer for the world title. Spassky was a gent and something of a philosopher; Fischer was the monomaniac, and he was appalled at his opponent's misapprehension. "Chess *is* life," he retorted. Spassky didn't stand a chance. Fischer destroyed him.

"I like to see them squirm," Fischer had said, speaking of his outclassed opponents some years earlier, when, as a juvenile wolverine, he was wreaking havoc in the Manhattan Chess Club. "The only goal in chess is to prove your superiority over the other guy," Kasparov told me not long after permitting me not to drown in the Caspian. "And the most important superiority, the most total one, is the superiority of the mind. I mean, your opponent must be destroyed. Fully destroyed."

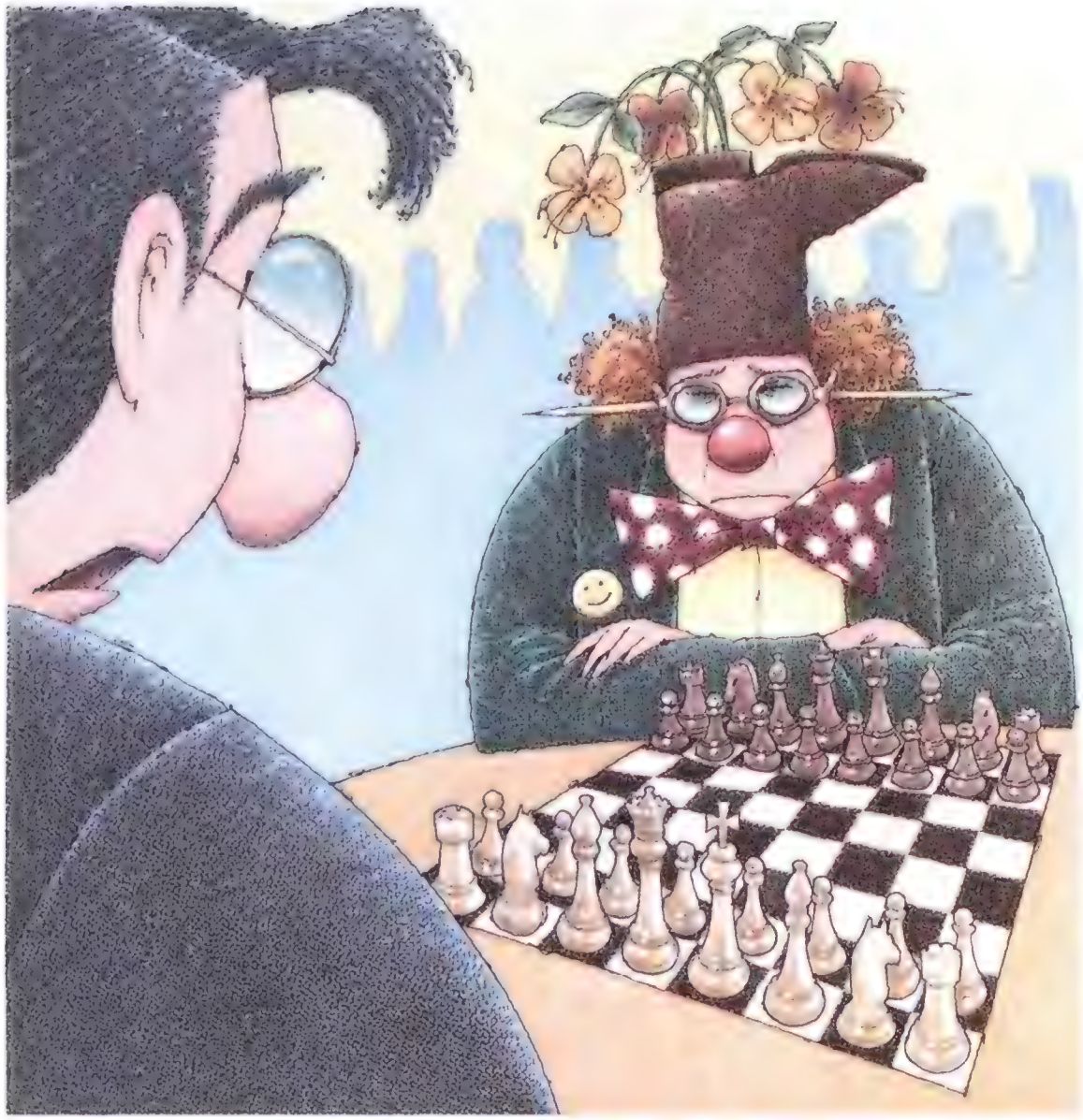
All of this is to say that Kasparov's reaction to Deep Blue and its fiendish programmers didn't surprise me a bit. If anything, I would say he was a model of temperance, considering the contest's hugely hyped stakes, his own considerable ego and the hypertrophied competitive spirit engendered by decades of facing down cutthroat aggression from homicidal twerps and louts on the other side of a hundred thousand tables. Naturally he took it hard. Kasparov had never before lost a multigame match against a single opponent. I only admire his restraint in not having taken a sledgehammer to Deep Blue. You don't expect Kasparov to be a gracious loser any more than you would have expected Maria Callas to admit that someone else sang *Tosca* better than she. Least of all a machine.

Where chess draws its excitement is in the confrontation of two wills, each baring his character.

Alas, what computers do well is calculate, and chess is a game of calculation. But computers will always play like machines, and win or lose, that play is unimaginative and boring. Where chess draws its excitement is in the confrontation of two living wills, each one baring his character as he goes spinning off into the possibilities of a game so complex that no one can even count the number of different combinations possible.

How vast? Well, a certain James Mason, a 19th-century Irish-American player, figured that there were 169,518,829,100,544 quintillion possible combinations within the first 10 moves only. After that, things get complicated. For an entire game, I read somewhere, you need to speak in images: take the number of atoms in the universe, and you'll have an approximation of all possible move combinations. With 32 pieces moving in different ways over 64 squares, you get the old geometrical progression trick, often cited in the legendary story of how chess began. An oriental sage named Sissa invented the game, the tale goes, to please a bored king. So pleased was the king with the invention that he told Sissa to name his price. "Oh, that's all right, King, old boy," said Sissa, "just lay a grain of rice on the first square, two on the next, four on the next and so on." The silly sovereign clapped his hands and called for the royal rice man. "Let it be done!" he said.

Well, naturally, there wasn't enough rice in the kingdom to carry out Sissa's trick, and the king was the first to learn never to trust a chess hustler. Less fancifully, scholars generally agree that chess began in northern India, perhaps around the 6th century A.D., that it was called Chaturanga and that it was played with



dice. At length the dice were discarded, the game spread to Iran, then into the Arab world and finally to Europe, while variants went eastward to become elephant chess in China and shogi in Japan. By the 15th century the six basic forms of chess pieces—king, queen, bishop, knight, rook and pawn—and their manner of moving had been standardized throughout Europe, games were being recorded for posterity and soon the names of the first great masters were on the lips of pawn-pushers everywhere. Ruy Lopez, Giochino Greco and François André Danican—more commonly known as Philidor—are still remembered today.

A career musician and composer, Philidor was the idol of the 18th-century chess mecca, the Café de la Régence in Paris. His extraordinary skills—creativity, visualization and seemingly endless powers of memorization—would make him look like a brother to Kasparov, were he alive. Philidor demonstrated a bit of the astounding machinery within a chess genius's head when, in 1793, he played three games simultaneously, blindfolded. The event was considered so fantastic that official witnesses swore affidavits confirming the feat, lest no one believe it. Not long afterward, though, Blackburne effortlessly played 10 opponents with his back turned, calling out his moves one by one. Alekhine brought the record to 32, and Miguel Najdorf, a Polish-born Argentinian who died last summer, made it 45 in 1947. More recently, a Hungarian named János Flesch was said to have upped it to 62.

Players' eccentricities may lead to the suspicion that the men in white coats can't be far behind.

How is it possible? Suffice it to say that these people see things we don't. Watch a professional at play and you'll notice that often he is staring out into space, viewing the game out there. The board's just the place where he makes his moves. Most of the best players enjoy something like total recall. Bobby Fischer was said to have remembered every move of every game he ever played. Kasparov likens his memory to a tape recorder. "Every now and then I have to sort of rewind it to get rid of the rubbish," he told me.

Even the rubbish apparently has a "recycle bin." Two years after our first meeting, I sprang a dirty trick on him: "Garry," I said, "tell me my telephone number." Instantly, he was in the competitive mode. "Don't tell me, don't tell me," he ordered, and the cogs and wheels began turning as he scowled. "Starts with a six, then five, then seven. . . No, no, don't tell me!" Well, he finally got all eight digits right, and the order was off by only one inversion. And this is a guy who meets thousands of people a year.

But that was nothing. Kasparov is the first to admit that others have had greater powers of pure memorization. Take, for example, the American chess master Harry Pillsbury, who in the 1890s consented to a test by two Pennsylvania professors. They handed him a slip of paper with this list of words: Antiphlogistine, Periosteum, Takadiastase, Plasmon, Threlkeld, Streptococcus, Staphylococcus, Micrococcus, Plasmodium, Mississippi, Freiheit, Philadelphia, Cincinnati, Athletics, No War, Etchenerg, American, Russian, Philosophy, Piet Potgleter's Rost, Salamagundi, Oomisillecootsi, Bangmamvate, Schlecter's Neck, Manzinyama, Theosophy, Catechism, Madjesoomalops. Pillsbury glanced at the paper, put it down and recited it back faultlessly. Then, before the profs had a chance to close their gaping mouths, he proceeded to recite it backward.

The mental gymnastics of chess

often seem to sap the mind and spirit as much as they exalt the memory. Top-level matches of a month or two are such a strain on the organism that professionals train for them like athletes, combining theoretical research with roadwork, cross-country skiing, swimming or weight lifting. It is common for a player to lose 10 or 15 pounds in the course of a professional match. A Temple University research team concluded that chess drains energy at a rate comparable to football. With a few exceptions, it is a young man's game: age exacts a tribute of faltering memory, jangled nerves and brute physical exhaustion.

After one of Philidor's blindfolded matches, Diderot implored him to give up the stunt, lest he cause permanent damage to his brain. The Polish grand master Akiba Rubinstein, a particularly strong player around the time of World War I, spoke less and less as he played chess more and more, and finally ended his days as an utterly mute and forgotten catatonic. America's Paul Morphy, "the pride and sorrow of chess," came out of New Orleans in 1858 to burst upon the European chess scene like a prophet, effortlessly sweeping aside all the greatest players who dared meet him. (England's Howard Staunton, who fancied himself world champion by virtue of his record, invented one pretext after another to avoid facing Morphy. On the plus side, Staunton gets credit for plugging the chess pieces now universally accepted as the standard for serious play.) After a 16-month whirlwind tour of the best competition he could get, Morphy returned to New Orleans, withdrew from the world and ended his days wandering the backstreets chattering to himself.

Morphy, Steinitz, Rubinstein and Pillsbury all ended their lives more or less mad, and the eccentricities, superstitions and gamesmanship of others can often lead to keen suspicion that the men in white coats can't be far away. Nimzovich, the barely stable chess master from Latvia, once very nearly destroyed an entire tournament by doing calisthenics onstage between moves, huffing and puffing and standing on his head to improve his circulation. (Another time, he complained to a referee not that a cigar-addicted adversary was smoking but that he "wanted to.") The Hungarian-American player Pal Benko swore that the spooky-looking Russian Mikhail Tal was hypnotizing him with his penetrating stare, and adopted sunglasses for the rest of the game. While Fischer was dissecting Spassky in Iceland, the flummoxed Soviet delegation demanded the right to dissect Spassky's chair and inspect the overhead lighting fixtures for hypnotic devices. All they found were a few dead flies.

After his defeated opponent spat on him, Joseph Blackburne replied by shoving him through a window.

In 1978, the fiery Russian defector Viktor Korchnoi met Moscow's Anatoly Karpov (president of the All-Union Socialist Good Boy & Clean Plate Club) in the Philippines for the world title. That time the Soviets had Korchnoi's chair x-rayed at a hospital while a gaggle of nurses giggled. "I pronounce this chair in good health," the radiologist said, poker-faced, as he removed the uncomplaining patient from the examination table.

My favorite instance of chess buffoonery happened when Korchnoi was playing Boris Spassky in Belgrade. Everything started beautifully for Korchnoi. He won five of the first ten games and drew all the others. The match seemed in the bag, but then Spassky sprang a devastating series of ploys. As usual, two isolation booths had been provided in the wings of the stage for the players as an escape from the stifling presence of the audience in the hall. Players frequently use these "rest cabins" to unwind during a championship match, but Spassky literally moved into his. Explaining that he had difficulty concentrating under Korchnoi's gaze, he left the stage entirely as of game 11, viewing the position on the big demonstration board erected for the audience, striding up for a few seconds to make his move and then scuttling back to his retreat like a her-

mit crab. Alone at the table to fight a phantom opponent as 1,800 pairs of eyes beamed down on him, Korchnoi began blundering, becoming so unnerved that at one memorable moment he gave his queen away, the kind of idiot move that most 10-year-olds would never make. Suddenly the initiative swung to Spassky, and he plunged ahead with another ploy. It was an oversize sun visor, of the sort that copy editors wore in old newspaper city rooms, but this one was bright silver in color. The glare of the demonstration board bothered him, Spassky explained blandly, and he needed some comforting shade. It was nonsense, of course, but Spassky knew he had old Viktor reeling.

"Korchnoi stopped in his tracks in amazement," reported a journalist, but the fun wasn't over yet. Spassky relentlessly plowed on, skillfully adding to his number as each day passed and Korchnoi grew closer to hysteria. Next came a comically huge pair of Mafioso-style sunglasses. Korchnoi sighed and rolled his eyes and threatened to walk out. One postponement followed another as principals, seconds and referees flailed away with the arcana of chess jurisdiction and precedent. The apogee of the dogfight occurred when Spassky appeared onstage with his masterstroke, a pair of black swimming goggles. Korchnoi's mouth hung open, and the audience roared with mirth and appreciation. "Tomorrow he's going to come with a bucket of water and a snorkel," predicted Michael Stean, one of Korchnoi's seconds. Korchnoi finally turned things around by riveting his eyes to the board and more or less forgetting Spassky, but the clowning had made him lose four games in a row, an absolutely unprecedented disaster. He won the match, but it was a close shave.

It was also, perhaps, a signal that things were beginning to change in the world of chess. For centuries the game had been largely confined to genteel competitions in genteel clubs, but the tensions of the brawl were always there, ready to explode. With the new industry of leisure, faster and better computers, bigger purses and, above all, television, chess masters today are tending to let it all hang out, just like their distant cousins in sports and showbiz.

More than any of the others of his

breed, it is the very telegenic Kasparov who is leading the movement. A deep and sincere lover of the game that has made him rich and famous (even if he is a sore loser), Kasparov has dedicated himself to popularizing chess and demonstrating the depth of its harmonious violence. Part Mike Tyson and part Mozart, he has played in discos, in an open-air Roman theater (directing living chess "pieces"), in hospitals for kids, in the mountains of Peru and in the Margaux vineyards of Bordeaux. He would do it in orbit the day after tomorrow if NASA gave him a lift. More than any other player since the mercurial Bobby Fischer, who stopped competing as soon as he won the world championship from Spassky back in 1972, he has brought excitement, vast media exposure and big money to a game that for far too long had treated its champions like nobodies and paid them peanuts. IBM knew what it was doing when it issued its Deep Blue challenge to Kasparov. The man sells.

A smart Franco-American PR entrepreneur named Dan-Antoine Blanc-Shapira saw the potential even earlier when, in 1994, he teamed up with Kasparov to launch the Speed Chess Grand Prix Circuit, an itinerant chess circus in which the world's 16 best players confront each other in hurry-up matches limited to 50 minutes apiece. The circuit has already played in theaters in Moscow, New York, Paris, London and Geneva, and Blanc-Shapira is now busily planning the next campaign.

Many purists sniffed at Blanc-Shapira's "bastardizing" of pure chess, but the professionals love him for it, because it affords them the opportunity to win some serious prize money. Playing on a stage decorated with dramatically lit sets representing giant chessmen, the contestants are spotlighted as they enter from the wings and are announced exactly like prizefighters—"and from Moscow, the challenger, Vladimir Kraaaaamnik!" During play, TV cameras provide giant-screen close-ups of every tic, wince and chewed cheek. Over headsets, spectators hear nonstop chitchat by two or three commentators, among whom there is always one gee-whiz Everyman ("Hey, it looks like Timman's in trouble!") and one ponderous expert who provides deep analysis. Blanc-Shapira's final touch is the tie-break, a terrifyingly fast game of "blitz" to decide drawn games. Black has four minutes and White five—but he is obliged to play only to win, because a tie-break draw is scored as a victory for Black. The result is not the finest chess in the world, but it is spectacularly breathtaking.

Kasparov likens his memory to a tape recorder. "Every now and then I have to rewind it to get rid of the rubbish."

"I've changed the mentality of the players," Blanc-Shapira explains happily. "Now they know they're playing for the public, not hidden away in some salon. I'll always remember the first time Evgeny Bareyev played in Paris. After he won his first match he just got up and walked off the stage. I was standing in the wings, so I pushed him back out. For a while he stood there like the perfect chess introvert, head down, playing with his hands, but then the applause finally got to him and something happened—he raised his arms in triumph. He was interacting with the public. It was great! Suddenly everyone could understand what a great sporting event chess could be."

A nice thought, that, but chances are it will take more than a Russian or two raising his arms to persuade the public to forsake basketball, hockey or professional wrestling in favor of the Four Knights Opening or the Leonhardt-Sozin Attack. Still, the tremendous interest generated by the Kasparov-Deep Blue confrontation demonstrated that there are a lot more chess players out there than had been imagined, even if they belong to no club or federation and play only pickup games against friends. This army of chess freaks certainly numbers in the millions, and its troops doubtless look up to Kasparov or Fischer or Korchnoi in much the same way lowly hoopsters model their moves on Michael Jordan, Magic Johnson or Larry Bird.

And why not? We 97-pound weaklings of the chess league can derive tremendous pleasure from watching the champions whale away at each other, and we're happy if we understand even half the time why they made such-and-such a move, and what it means. Lest any of us groupies be tempted to lose self-esteem, though, awed as we are by the brilliance of the gods of the game, I offer the following two bits of information.

A London newspaper in 1906 summed up a study on the intelligence of chess masters in these terms: "It will be cheering to know that many persons are skillful chess players, although in many instances their brains, in a general way, compare unfavorably to the cogitative faculties of a rabbit."

At the end of the 19th century, a team from Cambridge University played a match against a team from Bedlam, the notorious madhouse. Guess who won.

Rudy Chelminski once entreated Kasparov to play a game, but he will not reveal the outcome. Illustrator Jeff Seaver is not renowned for his endgame.

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Art that turns life inside out

WHEN THE EMPEROR OF Japan this past October awarded artist George Segal the Praemium Imperiale for a lifetime of achievement in sculpture, his nation's equivalent of a Nobel Prize, he was honoring a humble, pensive 73-year-old who had once been a chicken farmer. An originator of Pop Art, since 1961 Segal has been creating, in his former chicken coops, "environments" peopled with friends and family whom he casts in plaster. These scenes may also incorporate all sorts of media, including video, pastels on paper, painting and photography, as well as objects ranging from coffee cups and chair backs to a movie marquee and a New York subway car.

During a ceremony of pomp and splendor, a check for almost $120,000 was presented to Segal, a man who has lived modestly in the same house in New Jersey for 48 years with the same forthright, down-to-earth woman he married 51 years ago and who, ever since his first two galleries closed decades ago, has been represented for more than 30 years by the same New York dealer.

Now a wide audience has the opportunity to see why Segal has been garnering acclaim. A wonderful retrospective sampling of his art, curated by London-based Marco Livingstone, has been organized by the Montreal Museum of Fine Arts. "George Segal, a Retrospective: Sculpture, Paintings, Drawings" opens in mid-February at the Smithsonian's Hirshhorn Museum and Sculpture Garden in Washington, D.C. before traveling on to the Jewish Museum in New York and the Miami Art Museum in Florida.

This is the first large survey of George Segal's work in 20 years. And it is the best—several institutions that refused to lend their casts and environments to earlier shows have loaned to this one. You come away from the exhibition with an appreciation of the sculptor's versatility, his debt to abstract practices and his humanitarian concerns. Besides revealing how he matured, how his early, sketchy forms eventually became more self-contained and refined, the show provides what is probably as fine an introduction as there will ever be to Segal's second-generation Abstract Expressionist canvases of the 1950s; the ravish-

CASTING FRIENDS AND FAMILY IN PLASTER, GEORGE SEGAL CREATES "ENVIRONMENTS" THAT BRING INNER REALITY TO THE SURFACE ◆ BY PHYLLIS TUCHMAN

The Diner, 1964-66: a Hopperesque vision that suggests endless cups of joe.

ing pastels with Matisse-like aspects, from the 1960s; the more recent grisaille still-life paintings; and the new, astonishingly candid, large charcoal-and-pastel portraits of Segal's colleagues and relatives.

Last spring, when the FDR Memorial near the Tidal Basin in Washington, D.C. was dedicated, many Americans watching television became acquainted with three signature Segals: *Appalachian Farm Couple 1936*, *Depression Bread Line* and *Fireside Chat* (plaster versions of the first two are in the touring retrospective). The first of the three pieces was conceived at the end of the 1970s but was put on hold like the rest of the project while Republicans lived in the White House. Like a small child, the artist had to be patient—in his case, for almost 20 years—before his two simply attired, gaunt farmers, his five dejected men in heavy overcoats waiting for food, and a rapt radio listener were cast in bronze and installed at the 7½-acre site. During the opening ceremony, Segal talked for a few minutes with President Bill Clinton about the making of these works. The artist mentioned how he had been "overwhelmed" by the chance to portray "how ordinary people felt during the Depression." He remembers those times vividly, even though he was only a boy. To this day he still reveres FDR and his values and attitudes. Says Segal, "I was trying to reflect my father's admiration for the wealthy patrician who was able to speak beautifully and accurately about flat-broke immigrants."

Segal seems to have captured the imagination of the public as well. The crowds that have been flooding onto the grounds of the memorial pause in front of his sculptures, whether they have or have not heard of the artist.

The crowds that have been flooding onto the grounds of the FDR Memorial pause in front of his sculptures, whether or not they have heard of the artist.

Grandparents who don't understand a thing about e-mail or Websites recognize the radio in the alcove. "That's the kind I sent to my husband the first year he was in the Army. It was his Christmas present," one woman was heard to say on Labor Day weekend. Baby boomers explain to their kids how people who didn't have jobs stood in breadlines during the 1930s so they could get some food to eat. A man in a Dallas Cowboys shirt calls to his son, "Come here, this is America." Another father, looking at two of the bronzes, immediately responds, "You got rural, those farmers over there, and urban, these guys here." Someone else recalls, "He gave these 'fireside chats' and you thought he was talking to you."

And that is how many visitors to the FDR Memorial, young and old, from near and far, in wheelchairs and on crutches, in shorts and T-shirts, or wearing suspenders and squashed golf hats, react to Segal's work. The sculptor is trying to engender all sorts of dialogue. After all, he is talking to them. It is personal, direct, unafraid to pluck heartstrings. You too have these memories or you have seen someone posed or doing something like that, or you recall having once heard about such a thing.

In an age when art has either become obtuse or decorative, George Segal's works occupy a middle ground. Michael Brenson, formerly an art critic for the *New York Times* and today a commentator on sculpture, says, "I didn't think you could put a figurative sculpture in a public place and have it work so profoundly on so many levels. But George has done that. His pieces at the FDR Memorial touch people so deeply. Everyone wants to be a part of it. It's amazing how they empathize with this work even when they don't know what it means." Like other critics who have been to the site, Brenson noticed that almost everybody seemed to be carrying a camera—and taking a photograph of someone they knew standing in Segal's breadline.

Nothing about Segal's background suggests that he would become the respected and popular artist he is today. He grew up in the Bronx, the youngest of two sons of a kosher butcher. Back then, as Segal recalls, that borough of New York was a "small town," and images from there—say, a couple embracing by a row of mailboxes in a stairway or a woman standing by the doorway of a tenement—recur in his work. He had an aptitude for science; when he scored well on citywide tests he entered Stuyvesant High, still an elite public school that has graduated several Nobel Prize winners. Segal claims he was sent there not to become an astrophysicist but to improve his scrawly handwriting. "Everyone thought the discipline would do me good," he says. While "no one was interested in modern art," he says, he is grateful he was "taught how to dissect what we were reading."

Throughout the 1940s, Segal's education was interrupted. His family moved to the New Brunswick area of New Jersey so that his father could become a chicken farmer. Then, during World War II, he had to leave school and help his dad when his brother was drafted. By the end of the decade he had taken classes at Cooper Union, Rutgers, Pratt Institute and New York University. NYU had the

Girl Behind Bedpost and Chair, 1975: an ancient form—bas-relief—gets a new twist.

P. 55 WALKER ART CENTER, MINNEAPOLIS

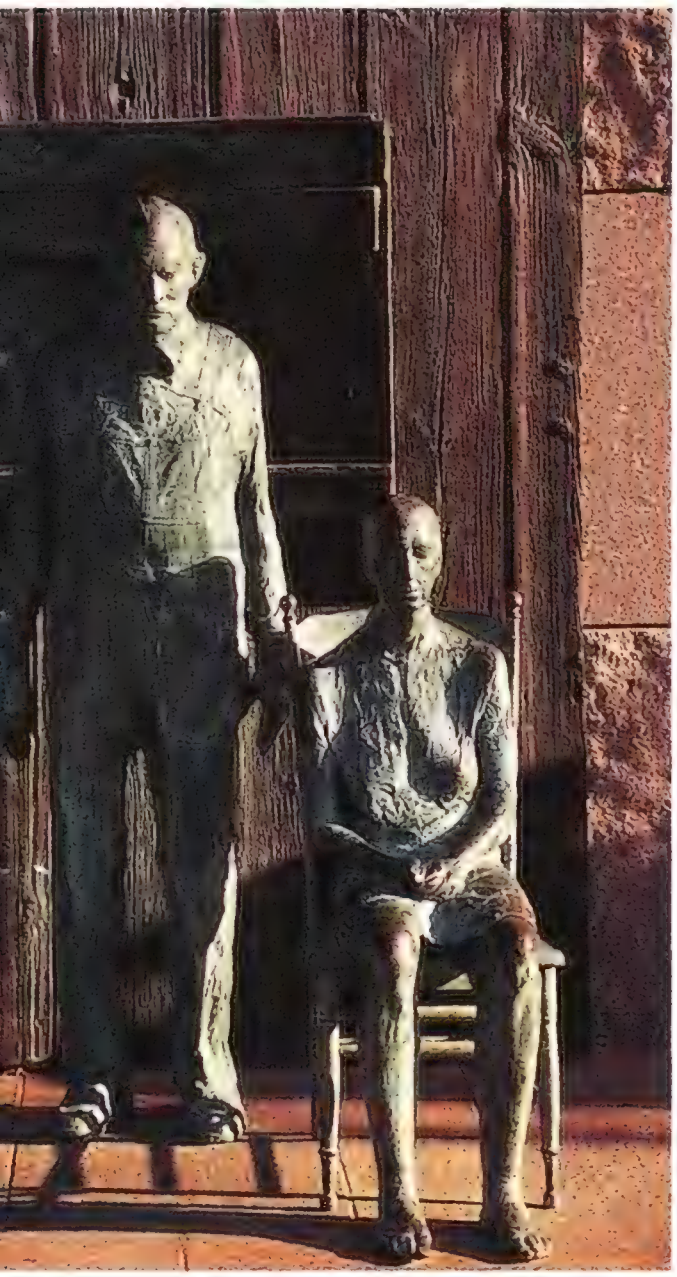
At the FDR Memorial: *Depression Bread Line* and *Appalachian Farm Couple 1936* express "how ordinary people felt."

most impact on his future. There Segal met fellow students Larry Rivers and Alfred Leslie, who would become famous long before he had even realized he would become a sculptor. They made their marks as figurative artists, and it appears that Segal did, too, but the underpinnings of his work, unlike theirs, are much closer to Minimalist abstraction. All three studied with nonrepresentationalists, the sculptor-architect Tony Smith—a close friend of Jackson Pollock and Barnett Newman—and painter William Baziotes, also an associate of the Abstract Expressionists.

Listening to them, Segal was puzzled. Why didn't their own art reflect the literature, film, philosophy, psychology, history and politics they were analyzing? Recently Segal described how Smith assigned his class to read James Joyce's *Ulysses*. "When we came to school the next week he had reproductions of Cubist paintings by Pablo Picasso and Georges Braque hanging on the wall. And he was challenging us to find connections between the way Joyce wrote and Picasso and Braque painted."

Having gotten married in 1946 to Helen Steinberg, whose father's farm was down the road from Segal's father's place, Segal needed to make a living. In 1949 he bought his own neighboring property on which to raise chickens and start a family (in short order he and his wife would become the parents of a son, Jeffrey, and then a daughter, Rena). "Being a chicken farmer," he told me recently, "was simply a mode of survival I learned from my father. That involved physical survival. Being an artist involves mental survival and a world of ideas. I still have to survive mentally and physically."

By the mid-1950s Segal was teaching adult art classes in local schools and community centers. Running the farm had practically bankrupted him. Yet he had managed to stay in touch with goings-on in the art world. Allan Kaprow—who would invent Happenings, the precursor of performance art, on Segal's farm—was teaching at Rutgers and living close by. Anyone who reads Kaprow's influential articles published during the '50s can see how deeply his ideas affected his new friend. He advises artists to be unorthodox, to use ordinary, everyday objects as well as



sounds and smells in their work. Then, too, Segal's first three one-man shows would be held during the late '50s at the Hansa Gallery in New York, an artists cooperative of which Kaprow was a member.

Segal spent the summer of 1956—and the next three—in Provincetown, Massachusetts, where Hans Hofmann ran his legendary school. About paintings such as Segal's *Provincetown Interior II*, a canvas from 1956 in which an older woman sits at a round table daydreaming beside an open book, Livingstone suggests apt connections with Matisse as well as Bonnard. He could have added that the model, the artist's mother-in-law, suggests comparison with a portrait Larry Rivers made two years earlier of his own mother-in-law, Berdie; and that the still lifes as well as the tipped tabletop from which they do not slide have been rendered in an expressionistic manner reminiscent of Hofmann's style. Segal's painting style will subsequently change—figures will become broader in their handling and more life-size; fewer colors will be used; and backgrounds will practically resemble abstract pictures—but he has already found his subject matter. Countless plaster figures will continue to sit at tables like this one; they will drink coffee, watch television, put on nail polish, listen to poetry, use a computer, merely wait.

In 1961 a student, the wife of a chemist who worked for Johnson & Johnson, a major employer in the area, brought to class some newly perfected plaster-impregnated bandages. By adding water to them, even a child could make a mold easily. Segal knew what he could do with them. In 1958, with plaster and chicken wire that he still had in his coops, he had modeled a number of "handmade" statues.

When Segal sat down on an old, once-elegant chair and had his wife wrap him with the bandages he had just been given, he was a painter. Once he stepped out of the shell that had been fabricated, he was a sculptor. He never has called this work a self-portrait, just as he rarely uses titles that identify his other models. Yet none of them are truly anonymous. While they are somewhat generic, they are closer in nature as well as poetics to Everyman and Everywoman. We all eat, sleep, talk. For the most part, that's what Segal's casts do, or seem to do. For instance, while they don't really eat, based on all those empty coffee cups in Segal's works they do seem to have drunk buckets of brew.

The components of Segal's environments, both the figures as well as the objects, are so familiar that it is easy to overlook the artist's inventiveness. For example, when Segal reassembles the plasters—they are cast in pieces—he literally carves as if he were chiseling in marble the space between, say, the crossed legs of a seated form or the angle at which a woman in a butcher shop holds her upraised, knife-wielding arm. Since Segal has chosen just the right implement or object to interact with his cast forms, we also don't think about what he has left out.

We know, too, that an abstract steel sculpture by an Anthony Caro or a Richard Serra rests directly on the floor of a gallery without an intermediary pedestal. We seldom consider that this is the case with a work by Segal as well; since we identify so strongly with his images, we just assume they should stand directly on the ground without pedestals, as we do. "Paintings used to be put in frames and sculptures on pedestals to mark off the difference between 'banal' reality and the interior life of the artist," says Segal. "When I decided to use real space and real movement, frames and pedestals weren't necessary. I find ordinary life and ordinary space miraculous."

In 1961, the year he made his first direct-cast form, Segal went several times to the Mark Rothko retrospective at the Museum of Modern Art. There, he responded to the amazing

When Segal sat down on an old chair and had his wife wrap him with the bandages, he was a painter. Once he stepped out of the shell, he was a sculptor.

way people looked standing in front of Rothko's evocative abstractions. In many of his own works, he has placed his plasters in front of strong, rich, geometric panels of color; for example, there's the deep-red back wall that sets the tone of *The Diner*.

Segal's method for casting his figures from life sounds easier than it actually is. After discussing with a model—usually a friend or relative—the pose he or she should assume, the sculptor covers any bare skin with cold cream (in 1989, Segal made casts of my own head and torso, so some of this description is based on experience). Classical music plays in the background. Then Segal dips pieces of wide, plaster-impregnated bandages in a bucket of water as he starts to create a patchwork-like pattern around the torso of the model. His touch is so delicate, you don't even feel his hands against your clothes as he creates a mold that, when cut in half and removed, resembles pliant armor. Next, a cast from waist to feet is taken. A mold of the head is made last. It takes about 15 to 20 minutes for each section to set. With a shower in the bathroom off the studio, you can get cleaned up quickly.

When he began to make sculpture, Segal left his surfaces plain; they retained a rough, hazy quality close in spirit to Willem de Kooning's abstract paintings. More recently, for the past 20 years, he has been making molds of his molds, pouring a thin stream of plaster into the cast-from-life interiors, which are embedded with more details and marks than the outsides. For example, on many plaster ears you can spot the pierced holes where earrings ordinarily are. During different phases of his career, Segal has painted his casts black and in color, applying pigment as if he were making a fresco. In the 1970s, he had a "blue period" reminiscent of Picasso's. *The Costume Party*, in the current retrospective, is an exception in its figures not being uniformly one color.

In *Provincetown Interior II*, 1956, Segal had already found his subject matter.

Segal rose to prominence alongside the other pioneers of Pop—Roy Lichtenstein, Andy Warhol, James Rosenquist, Jim Dine and Claes Oldenburg. And he is puzzled by the way they are viewed collectively. "My eternal complaint," Segal admits, "is that Pop is defined so artificially. Lichtenstein and Oldenburg do more than witty, detached commentary on American advertising. They plumb the insides of their temperaments. That's what I try to do, too."

Along the way, Segal has had some help from his friends and family. They have been much more than convenient models. They respond just as truthfully to the situations the artist is trying to enact in his work as they would if he were coming to them for emotional support and needed a shoulder to lean on. Danny Berger, who manages the shops at the Metropolitan Museum of Art in New York, has posed for several environments, including two important commissions, a memorial entitled *The Holocaust*, near the California Palace of the Legion of Honor in San Francisco, and the FDR Memorial's *Depression Bread Line*. Asked to portray someone who had starved to death in a concentration camp, he felt he should pose stark naked; and, he says, "I threw my arms apart in a theatrical gesture of death." Since his was the first cast taken, many of the other figures revolve around this prototype. About his experience being encased in plaster for *Depression Bread Line*, Berger recalls, "It was the worst. It was August and I had to wear an overcoat in the unair-conditioned studio. It was so hot, I thought I'd faint." Instead, his man looks truly famished and haggard.

About his experience being encased in plaster for Depression Bread Line, *Berger recalls, "It was August. It was so hot, I thought I'd faint."*

Segal has executed a number of pieces based on Old Testament sto-

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"I've found," Segal learned long ago, "that the inner state of the mind connects to the outside surface of the sculpture."

ries. If they were good enough for Rembrandt and Caravaggio, he reasons, they are good enough for him. The everyday life of people hasn't changed all that much. Take *Abraham's Farewell to Ishmael*, which, beneath the high ceiling of a spacious room at the Montreal Museum of Fine Arts, never looked better. An actual family modeled for three of the figures—the wife has posed for 10 or 12 plasters. In this instance, she and her husband were about to send their youngest son to prep school and their home would be empty. Segal captured their anguish. Their emotional state could not be more appropriate for the scene that he sought to depict. "I've found," Segal says he learned long ago, "that the inner state of the mind connects to the outside surface of the sculpture."

Over the years a number of his friends have refused to take a second look at their plaster doppelgangers. It is startling to confront a duplicate of your body; it's certainly stranger than hearing your voice recorded for the first time. This is your body. Suddenly you discover the meaning of the phrase "You look like your mother." Fortunately for Segal, most of the people who pose for him are not vain. Berger says he only looks in the mirror in the morning when he shaves. When he confronts his casts, he sees George Segal sculptures. Over the decades, some of Segal's family and friends have posed so often that his oeuvre is also a history of their lives, how they felt at such and such a time, how much they weighed back then, who they were that day. In a way, a number of people have their own living diaries as told by artist George Segal.

Segal's most recent large charcoal-and-pastel portraits are perhaps his most personal expressions to date. In some cases these works on paper are harrowing portrayals, even though some of them are based on photographs taken by the artist. The retrospective closes with these moving portraits, the works of an older master who is unafraid to face reality.

As a younger generation transforms Segal's environments into installations, and his life-affirming figures facing the issues of their day segue into the latest examples of video art, the older sculptor turns to his distant predecessors. Speaking about Rembrandt, Segal notes how "he accepted everything so that when his pieces come together, you find a simple strong structure meshing with compassion for human drive. His questions, yearning and desire are expressed in a language that includes the nuanced quality of light." As in all the art Segal admires, in his own work, too, one discovers, as he puts it, "the magic of daily life."

Phyllis Tuchman, author of George Segal, 1983, *lectures and writes on art.*

Cézanne Still Life No. 4, 1981, is one of Segal's homages to the masters of modern art.

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Biologist Mel Warren brings up an orange nacre mussel. Right: A female southern rainbow lures fish to disperse its larval young.

To Reproduce, Mussels Go Fishing

THE EVOLUTION OF THIS FRESHWATER PEARL-MAKER REACHES ITS APEX IN OUR SOUTHEASTERN RIVERS

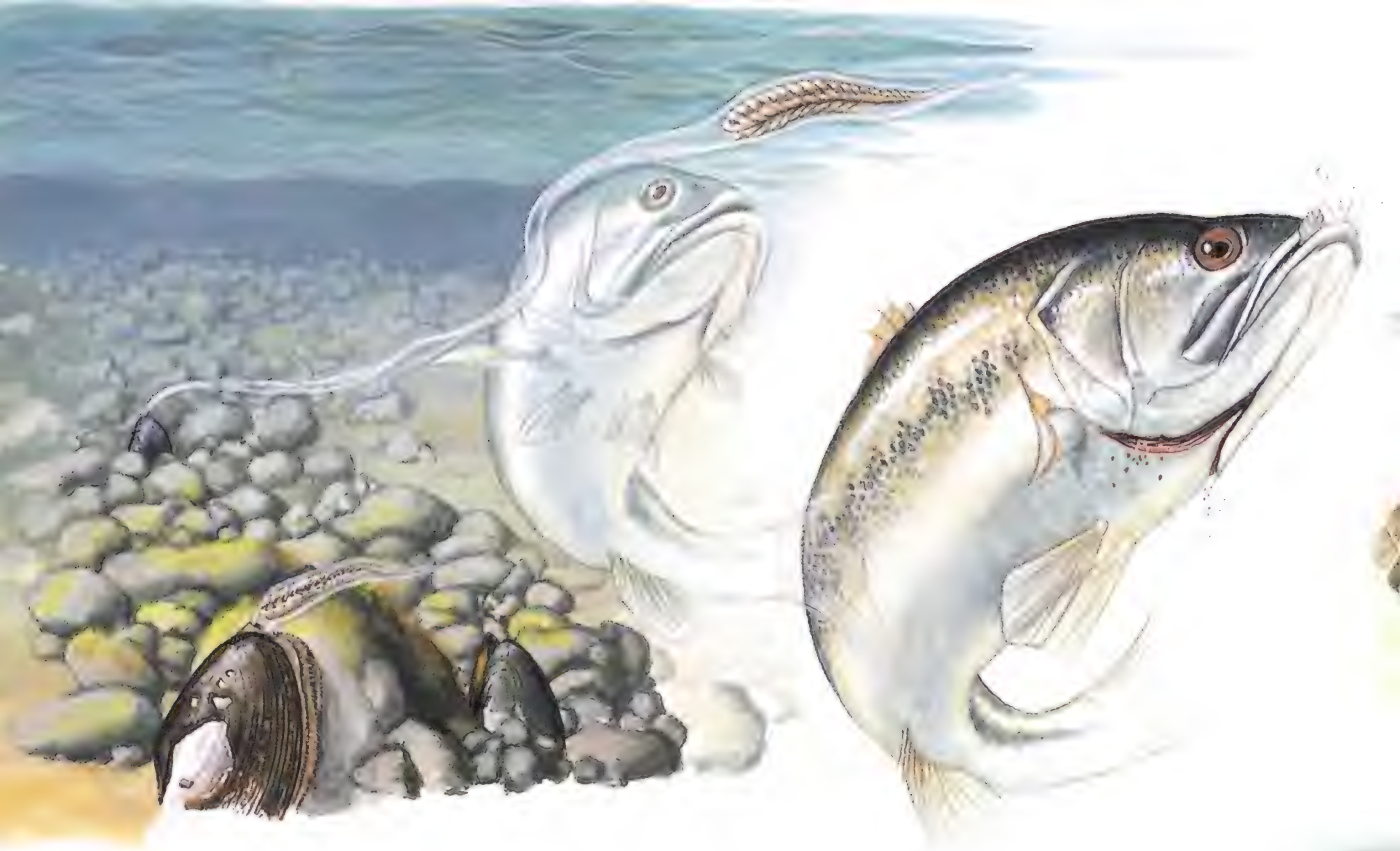
ALL BUSINESS, THE SILVERY MINNOW FLIRTS IN THE TOPAZ WATERS of Brown Creek in northern Alabama. Several crayfish scull in the silt, hunting for food. A posse of snails on a rock grazes on the algae. A largemouth bass feints at the minnow. The crayfish scurry, the snails slink under the rock; only the minnow, seemingly unmindful, remains.

The bass moves in for the kill, then finds itself with a mouthful of glochidia—tiny mussels in the larval stage. The Trojan minnow—a gelatinous packet of mussel larvae designed to emulate a bite-size fish—had been tethered by a filmy three-foot tube to a mussel, an orange nacre mucket. The minuscule mollusks clamp onto the bass's gill filaments. Now the fish has become an unwitting agent in their dispersal. The mussels will travel with the fish until they can make it on their own. After a few weeks, they will drop off and settle in a river or creek to live anywhere from 30 to 40 years, even, in some species, a century. Eventually they will produce their own faux fish packed full of larvae to tempt another bass.

BY ADELE CONOVER

As the Rodney Dangerfields of the animal world, freshwater mussels are regarded by most humans (if they think of them at all) as inferior versions of their glamorous seafood cousins—marine mussels, which are so relished with garlic and wine. Yet freshwater mussels have spawned major industries—producing pearls, or providing shells to button manufacturers and "seeds" for growing cultured pearls. Their tale also includes Native Americans and explorers, biologists and divers, town festivals and grandpa's shirt studs.

PHOTOGRAPHS BY LYNDA RICHARDSON



Left to right: A bass eyes and then takes a packet of mussel larvae that has been let out into the current by an orange nacre mucket and looks vaguely like a fish; the larvae attach themselves to the fish's gills (see insets), only to drop off weeks later.

The first inkling of the orange nacre mucket's elaborate ruse was discovered in a close relative, the southern sandshell, by U.S. Fish and Wildlife Service (USFWS) biologist Bob Butler as he sloshed in Limestone Creek, a tributary of the Pea River on the Florida-Alabama border, in June 1988. Butler knew that in many mussel species, after fertilization and brooding, a mother mussel spews countless glochidia in the water with the hope that somehow they'll latch on to the "right" species of fish. In most cases, the glochidia of a given mussel species can transform themselves into juveniles while attached to only a few species of fish. These are known as the host fish.

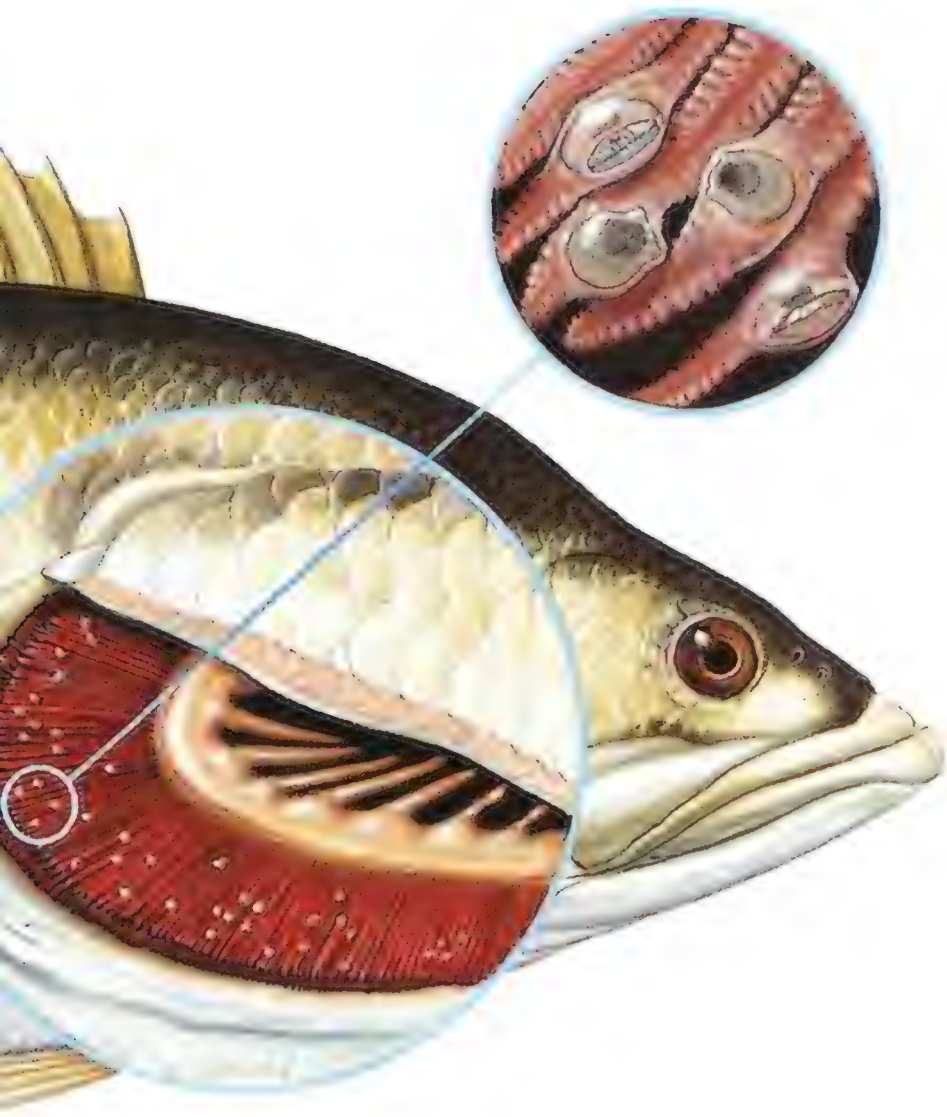
To increase their chances, some mussel species have reshaped their mantle flap—a piece of tissue that can be moved out of the shell—to masquerade as fish prey (p. 70). Sometimes the larvae are wrapped in a mucous "conglutinate" to look like food—a bloodworm, insect larvae, fish eggs or even a small fish. Scientists are fairly certain that the appearance of the conglutinate determines what species of fish will be attracted.

Five years later, in the spring of 1993, while wading in Brown Creek in Bankhead National Forest in Alabama with biologists Paul Hartfield of the USFWS and Wendell Haag of the U.S. Forest Service (USFS), Butler spotted a glochidia package entangled in a fallen hemlock sapling. A few minutes later, the biologists recorded a mother "giving birth" as she reeled out an ersatz fish attached to a mucus-like strand (see illustration above). The fish was a glochidia package, complete with an eye spot.

Freshwater mussels are complex creatures with a kidney, stomach, intestine, intake and outlet siphons, gills, a foot, a mantle and a "brain": a handful of neurons connected by three ganglia. They can discern light and dark and temperature changes. "Your average four-ounce mussel can pump two quarts of water per hour," says Dick Neves, a USFWS biologist who also teaches at Virginia Tech. They inhale algae, diatoms, silt, and metals and other particulates. Anything inedible is neatly packaged in mucus and spit out.

When a young mussel first drops off a fish gill, it uses its tiny foot to push food into its mouth until the siphons develop fully. As the mussel matures, its foot takes on a more conventional use—helping it get around as well as bury itself in the stream bottom. As adults, mussels are usually found semi-buried in the creek bottom, shells agape, siphons hard at work straining the water.

Nearly 300 freshwater mussel species are found in the United States (mostly in Southeastern rivers), more than



anywhere else in the world. No less than 250 species of crayfish and 313 of snails dwell in Southeastern rivers. "You don't have to go to the Tropics to see biodiversity; it's right here in your backyard," says Bob Butler.

All of this variability is the product of time, a range of habitats and a good location. Freshwater mussels were here when the Appalachians were still forming. While the Appalachians were weathering into the relative stumps that we see today, however, our freshwater mussels persevered, particularly in the Southeast, which escaped ice-age glaciation.

Freshwater mussels were regarded with enthusiasm by mound-building Native Americans, judging from the middens they left behind. These early inhabitants prized freshwater mussels not only as food but for their pearls and shells, which served as tools, decorations and jewelry.

Nor did the pearl mussel go unnoticed by Hernando de Soto. As related by De Soto's scribe, at the River of the Holy Spirit (probably in Georgia) a woman who had been taken captive made her escape carrying with her a basket containing numbers of unbored pearls.

The New World's introduction to freshwater pearl fever began in 1857 near Paterson, New Jersey. A shoemaker named David Howell gathered some mussels for his supper from a local stream called Notch Brook and discovered a 400-grain pearl, nearly an inch in diameter. One expert estimates that the pearl would have been worth $25,000 if it had not been cooked. In the pearl rush that followed, Notch Brook was just about stripped of mussels, and locals had prospered to the tune of $115,000.

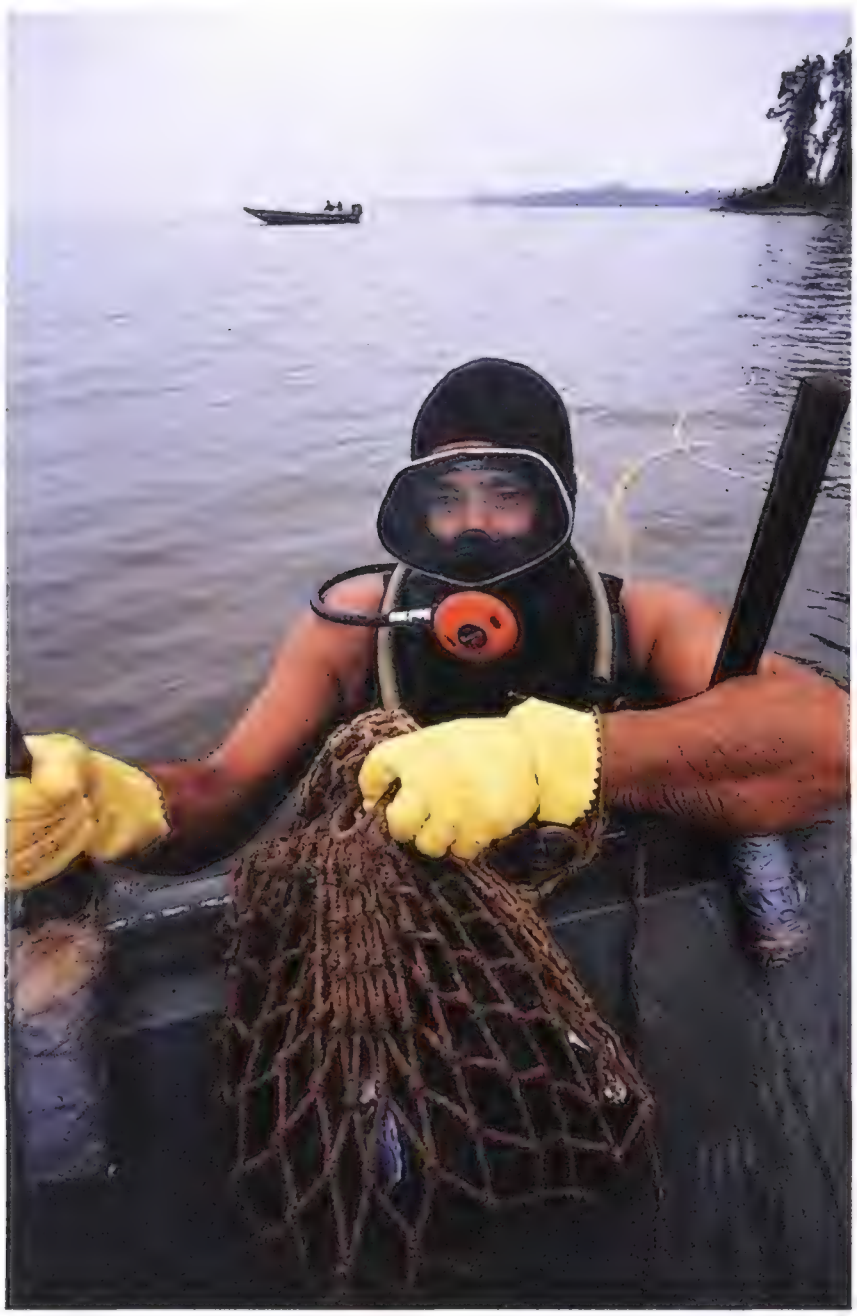
As word got around, people began to view their rivers anew. Early on, they picked and toed mussels in shallow water and, in deeper waters, raked them from the bottom. The waste in mussels was tremendous, but pearls were found in New York, Ohio, Texas, Arkansas, Florida, Connecticut, Mississippi and Wisconsin. In Wisconsin in 1889, nearly $300,000 worth of pearls was found. In 1902 two pearls found near Lansing, Iowa, were reportedly sold for $50,000 and $65,000. There were pearl rushes in other waters in the Ohio Valley drainage—the Clinch, Eel, Little Miami, Mississenewa, Tennessee, West Fork of the White River and Wabash.

Pearls from the Wabash River were said to have the finest luster and greatest value of any in the Midwest. A Vincennes, Indiana, jeweler of the time, Granville "Granny" Palmer, contended that people "really like a beautiful pearl, much more than a diamond." He went on to note, "If you found a good pearl, that was great, then everybody got drunk in that camp."

Pearlers weren't the only threat, or even the biggest, to American freshwater mussels. In 1891, a German button maker named John Frederick Boepple, using freshwater mussel shell, established the first freshwater pearl button company in Muscatine, Iowa. By 1896, bolstered by protective tariffs, the manufacture of pearl buttons had become an industry. Shells big and small, young and old, were harvested as if there was no tomorrow. The mussel supply was presumed to be limitless, as was demand. "Pearl buttons [are] now worn by nearly every individual from the cradle to the shroud," U.S. Bureau of Fisheries biologist Robert E. Coker pointed out in 1919.

In 1916, when button production peaked, American factories turned out 40 million gross with a value of $12.5 million. In the Mississippi River system alone, 9,746 mussel collectors were employed. The Bureau of Fisheries had begun to worry by 1910. The agency tried to culture freshwater mussels (without much success) and began surveys of watersheds where there might be more mussel beds. By the 1940s, and just in the nick of time from the mussels' perspective, plastic buttons came on the scene, and the American shell button industry dwindled.

In mid-century the American freshwater mussel seeded a new industry: cultured pearls. The thickness, solidity and iridescence of American shell that made it prized by the button industry also made it valued by the Japanese



Clockwise from left: Mike Cameron surfaces with a ten-pound haul after 30 minutes; his employers, Judy and Leon Bivens, clean the catch; Lonnie Garner buys shell to sell to the makers of cultured pearls; a washboard mussel shell holds nuclei for cultured pearls.

as the best material for a cultured-pearl nucleus. Oysters protect themselves by encasing irritants with nacre (mostly calcium carbonate), forming pearls. Starting with a relatively large, round irritant (a piece of mussel shell), the oyster makes a pearl in a relatively short time.

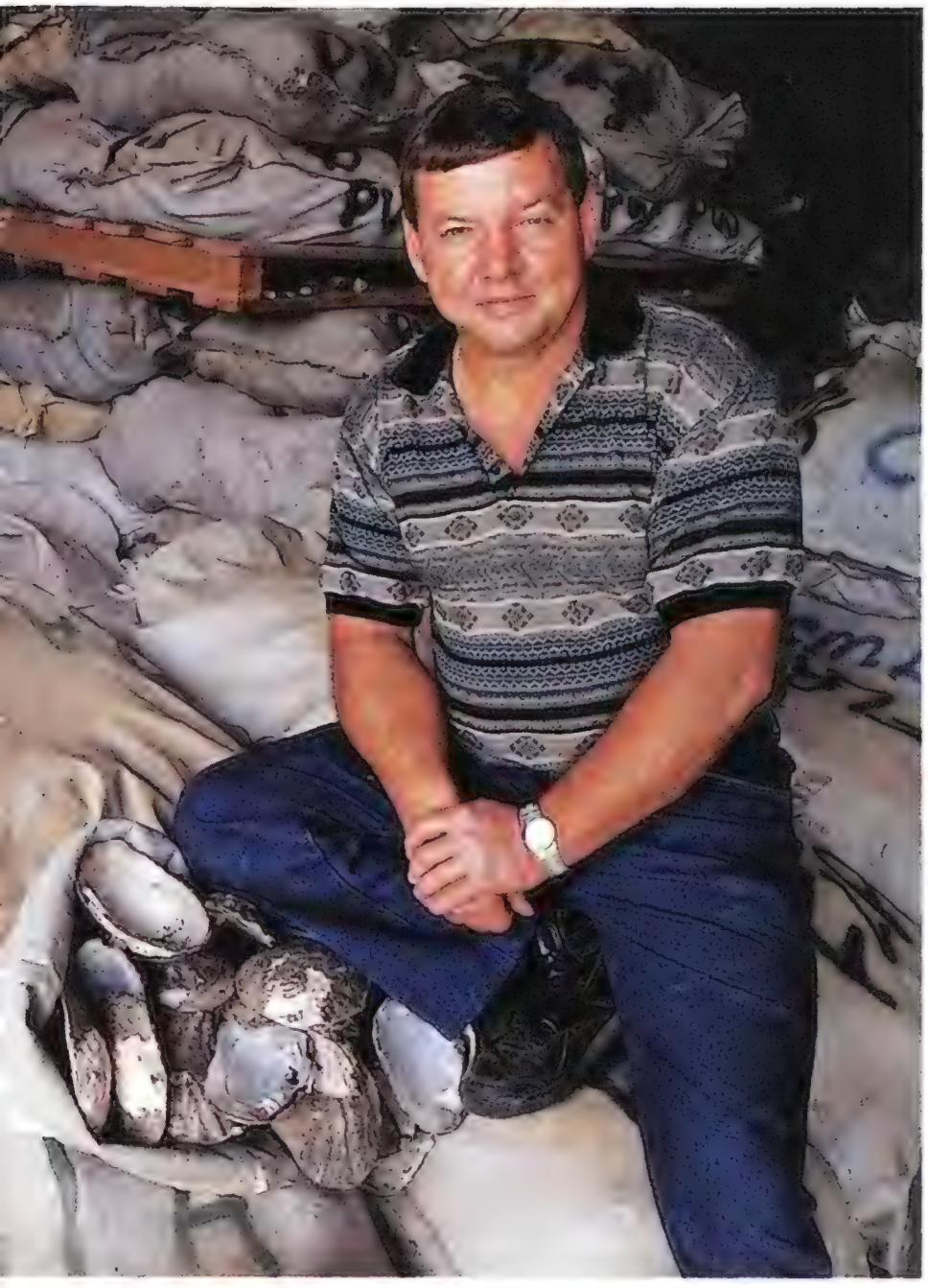
Today cultured pearls are a $3 billion industry (SMITHSONIAN, January 1985). But there are signs that the use of American mussel as the major material for pearl nuclei may be waning. Pollution, exploitation, dams and the advancing zebra mussel (SMITHSONIAN, February 1994) have had their effects. The latter is overwhelming native species with sheer numbers as it spreads across the country.

If the pearl industry does turn from American shell to another "seed" for cultured pearls, among the casualties will be the American shell industry—and people like shell exporter Lonnie Garner, CEO of the U.S. Shell Company in Hollywood, Alabama: "I've dove, picked, brailled [dragged the bottom using special hooks, to which the mussels attach themselves], made the crowfoot hooks, cut the wire to make the chain, built the winches, built the boats. . . . I grew up with it."

As a businessman Garner thinks of the American freshwater mussel as a renewable resource. "A mussel population can be managed just like deer or waterfowl. We ought to look at a seven-inch washboard mussel just like it's a 400-pound deer." He has a bit of a love-hate relationship with the biologists. "They mean well but when I talk about management to them I feel like a Baptist preacher talking to a bunch of atheists." He says, "We got to stop this pollution and we got to change the effect the dams have had on mussels."

In the name of navigation, flood control and eventually hydroelectric power, dams were erected on the Mississippi River and throughout Kentucky and Tennessee. "In the years spanning the 1930s to the late 1970s," notes biologist Jim Williams of the U.S. Geological Survey (USGS), "more than 125 large dams were constructed in the Southeast."

According to USGS biologist Steve Ahlstedt, there are 100-year-old mussels, some the size of small hubcaps, stuck between dams with no way to reproduce because their host fish can't get to them anymore. For instance, the skipjack herring, a.k.a. the Tennessee tarpon, could once be



found in every major watershed from Florida west to Texas and north to Pennsylvania and across to Wisconsin and Minnesota. Now, because of the dams, the skipjack herring can't abet ebonyshell mussels of the upper Mississippi watershed. The hickorynut mussel has also been marooned in the upper part of the Ohio River because the shovelnose sturgeon can't climb dams, either.

At the moment the price of shell is down. "Nobody buyin'," says Garner, sitting in one of his storage sheds piled high with bag after bag of mussel shell—washboards, inky-looking ebonyshells, monkeyface and pimpleback. Garner blames his current stock overload on a virus that knocked out nearly 60 percent of the oysters in Japan. "Now we're feelin' the ripple effect," he says. If the American shell industry goes down the tubes, he adds, "what would the rivers be without the people? I'd hate to see the day when the river people aren't out workin' on it."

"Lonnie Garner's not buying any shell," confirms mussel fisherman and dealer Leon Bivens, owner of Bivens Shells and Flags in Athens, Alabama. But Garner's stock overload doesn't mean that Garner rival D'Lon Dobson, production manager of Tennessee Shell in Camden, Tennessee, isn't buying.

Bivens is still out on the river, or rather Wheeler Lake, a 40-mile stretch of the Tennessee River between dams. "We're river rats," says Bivens' wife, Judy. The couple started out married life together when she was 13 and he was 17, picking and ginning cotton and catching fish commercially. But as Judy says, "With fish selling at 45 cents a pound and everything full of mercury and DDT," they were delighted when another shell exporter, James Peach, president of American Shell, came to them. "He bought us diving gear and he got half of what we got," says Leon. "We've dove in Tennessee, Texas, Georgia. . . . I don't know what else I'd do, I'm 54 years old and I've got a seventh-grade education. Only job I could get would be minimum wage—that would give me about enough money to buy gas to get to the job and back."

Leon is also the middleman in selling shell caught by his son, Steven, nephew Kevin and son-in-law Bradley Carter, as well as any other mussel fisherman who brings a bag of mussels to the Bivenses' spotless shop—a garage furnished with a scale, diving gear and a couple of barrels for "cooking out" the mussels. (Dealers want shell rather than the mussel itself. The whole thing has to be cooked and the meat cleanly separated before the shell goes to market.) When Bivens has about 2.5 tons he drives the load to Camden, Tennessee, to sell to Tennessee Shell.

The professional mussel fisherman is an independent sort, and mussel fishing rigs reflect their owners' individuality. Out on Wheeler Lake, Leon's 16-foot-long flat-bottomed boat whisks past five unoccupied boats—the only sign of life is a diver's flag and a telltale yellow air tube leading over the side and into the water from an air compressor (often a converted beer keg) on the boat. A diver can make $70 to $100 a day. Today Steven Bivens sits morosely in his boat, his ever-present "diving buddy" Fred, a largish black-and-tan dog, at his side. "I've been out here for four hours and only got one mussel. That's about $3," he says. "They must be dug in."

Diving for shell is risky business. As Jeff Garner, Alabama state malacologist, says, "It takes a tough man or woman to crawl around in the dark at the bottom of the lake to pick up shell." A diver in Texas drowned not long ago when his air hose became knotted in a swift current. Not far from here a diver nicknamed Sharkbait died of hypothermia when he dove without the right protective clothing. In diving for mussels, apart from fighting the current, the trick is to stay down long enough to find the mussels and then selectively pry them out. The Bivens troops all wear lead belts that can easily be dropped if they get into any kind of trouble. Other divers, who either can-

Above: A mussel waves its minnow-like mantle flap to lure a fish. Right: In a lab glochidia glow like semiprecious stones.

not or will not buy regulation weights, improvise. One weighed himself down with a cast-off kitchen sink and another tied himself to a manhole cover. Neither resurfaced.

Steven Bivens says, "You never know what you'll run into under the river. . . . Might be a 70-pound flathead catfish four feet long that'll bump you if you're near their nest. Or you'll get a bite from a gar or an alligator snapping turtle. But that's nothing. It's the concrete blocks I watch out for. If I run into one, I just back off . . . never know *who or what* might be attached to the other end of it." Other underwater surprises are loaded guns, sunken boxcars, drowned trees and two-foot-long salamanders known as water dogs.

The two barrels at the Bivenses' are full of cooking mussels—washboards, butterflies, pigtoes, monkeyface. As soon as they're cooked out, Leon dumps them on the driveway with a big scoop. With the deftness of a surgeon Judy removes the meat from the shell, pinching for pearls as she goes. Every now and again a misshapen pearl pops up. "But musslin' isn't like it used to be," says Judy.

A similar sentiment is expressed by the biologists: "When we see a mussel we talk about it," says Mel Warren, research biologist at the Forest Service research lab in Oxford, Mississippi. This entire assemblage of invertebrates is threatened. Some 70 percent of American mussel species are in jeopardy, especially in the mussel-rich Southeast, where freshwater fauna are in such deep trouble that, at a recent meeting convened by the World Wildlife Fund, biologists declared most mussel habitat, primarily Southeastern U.S. waterways, critical global hot spots. "The Southeast is where the action is," says Jim Williams. Initiatives are under way to bring back freshwater mussels in North America.

Mel Warren, Wendell Haag, Paul Hartfield, University of Alabama biologist Chuck Lydeard and his graduate student Kevin Roe are on their way to the headwaters of the Sipsey Fork in Bankhead National Forest in hopes of finding the orange nacre mucket and her pal the largemouth bass. It's a cold April day. The royal fern is not up yet, but rugs of bluets, violets, trillium and coreopsis grace every sunny clearing. The white flowers of wild dogwood and laurel and the dark red flowers of pawpaw dot the understory, while beech, pine and big leaf magnolia preside. At the Sipsey Fork, a tributary of the Black Warrior River, a school of torpedo-shaped redhorse flashes past.

The Bankhead is an island of wilderness in a sea of dammed rivers, cotton fields and sprawling development. Yet here is a remnant of the Southeastern mussel diversity that greeted De Soto.

Although the Bankhead, like most every forest in the Southeast, has been repeatedly logged, the U.S. Forest Service has done a good job protecting the streams. Hartfield notes that elsewhere in the region the creeks are unraveling. "You'll see this fine clear sand. That's a bedload—an artifact of bad agriculture farther upstream, or construction or cows muddying things up and adding to the erosion of the glue—the silt and clay." The agency has even gone so far as to restrict horses by closing some horse trails and redirecting others away from streams. "Horses are hell on mussels," notes Hartfield. "They crush mussels in streams with their big hooves."

The musselmen hit the stream. Chuck Lydeard and Kevin Roe will try to clip pieces of muscle tissue from the feet of mussels for DNA work. Wet-suited Mel Warren, surveying mussels, crawls slowly along the bottom. When he finds one and identifies it, he returns it to its "hole." The water is 50 degrees F, possibly warm enough for mussels to release their glochidia. Hartfield and Haag get ready to check the creek bottom with "water scopes"—glass-bottomed buckets. At first this seems a silent profession, but soon the names of mussels fill the air. Within 20 minutes, the musselmen have found triangular kidneyshell, southern pocketbook, rainbow, dark pigtoe.

At Flannagan Creek they find what looks like a displaced Thai noodle. "They're here," says Hartfield. "Here's what we came for—evidence of a breeding orange nacre mucket." But the "fish" at the end of the Thai noodle looks pretty raggedy and it's not attached to Mom. Not far away, however, a pair of orange nacre muckets, female and male, are pumping water.

At the Forest Service lab in Oxford, Mississippi, a dozen southern rainbows are living in individual aquariums. Some sit like headstones. Some toss about modified mantles that look like dreadlocks; others flutter mantles as sub-

tle as eyelashes. Still others display what looks like a waving crowd of fevered alums at an Alabama-Auburn game. In one aquarium a bass regards a mussel. The mussel waves. Still the bass hangs back. Finally, the bass grabs a quick nip and ends up with a faceful of glochidia.

Biologists especially want to know which fish species are host to which mussel species. In his laboratory Haag tranquilizes a fish and applies glochidia directly to the gills. A few days later he again tranquilizes the fish and checks under a microscope to see if the larvae are still there. (As the fish hosts for less than half of mussel species are known, establishing the pairing is a crucial step in mussel recovery efforts.) In another couple of weeks, Haag will vacuum the bass aquarium to see if tiny mussels have dropped off and are pattering about on their newly developed feet. The bass will be none the worse for wear.

At the lab, captive propagation of the endangered tan riffleshell is working so well that the species is being reintroduced into the Hiwassee River. It's easier to raise tigers than mussels, however. Mussels require a current of running water to feed, breathe, mate and spawn. As captives they can be protected from predators such as muskrats, raccoons and even crows, but they are still fair game for fungi and bacteria. Researcher Francis O'Beirn says, "They have to be scrubbed down individually to rid them of fungi and bacteria. . . . Mussels accomplish this toiletry themselves in the wild by digging themselves in the mud."

O'Beirn and graduate student Michelle Steg are working with the unendangered wavy-rayed lampmussel before they turn to the tan riffleshell. These proxies completed their journey from glochidia to baby mussels by exposure to largemouth bass hosts, who traveled by truck from Arkansas. The babies, which look like a bunch of tomato seeds, will "soon be living a full life," says Steg.

The only place in the world with a naturally reproducing population of tan riffleshells is the Clinch River in southwestern Virginia. USFWS mussel biologist Leroy Koch, who oversees the population, says, "Up until 1994, there were only a few individuals left in scattered areas. In 1995, a student stumbled on one in the town of Cedar Bluff."

Some communities regard having an endangered species in their midst as equivalent to having nuclear waste dumped in their backyard, but Cedar Bluff, Virginia, regards its mussels with a certain pride. Town manager James K. McGlothlin says, "The riffleshell are here and it's a fact. And the citizens of Cedar Bluff are not going to be guilty of letting the last tan riffleshell go extinct." The rare mussel has become so much a part of the community that every fall the town holds a "mussel race." The race itself is based on the tan riffleshell's reproductive cycle. A "giant mussel," sculpted by local oral surgeon Glenn Harrison, releases "glochidia," numbered Ping-Pong balls bought by participants, from the town bridge. Downstream several wind socks in the shape of fish catch the "glochidia" as they float by; the winner's ball is the first to get caught. The proceeds last year went to build a playground. (In 1983, not far from here on the Clinch River, the Nature Conservancy purchased an assemblage of islets called Pendleton Island to preserve a half-mile stretch of mussel bed populated by 45 mussel species.)

The freshwater mussel would seem to be able to do everything except provide a cure for cancer. That could change. "You never see a tumor on a freshwater mussel," says biologist Neves. "Their resistance is legendary." The mussel may once again surprise us. But even if they don't hold a cure for cancer, a few freshwater mussels—for the moment, anyway—are still out there, winking seductively at obliging fish, filtering the water for the benefit of all.

These ungraded, low-value Tennessee River pearls were collected from mussels that were "cooked out." The dark, misshapen pearl at center is about an inch across.

Biologist Adele Conover has never lost her infectious enthusiasm for the natural world. Lynda Richardson had never thought much about mussels until she was assigned to photograph them.

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July 15, 1986:
Chrysler Corporation designers sketch an idea that moves the passenger cab forward on the chassis and the wheels to the corners, creating a larger space for people. It contradicts eight decades of automotive design.

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International Motor Press Association gets preview of new "cab-forward" sedans at Moran's Restaurant in New York. Journalists are, briefly, too excited to eat.

September 15, 1992:
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April 2, 1993:
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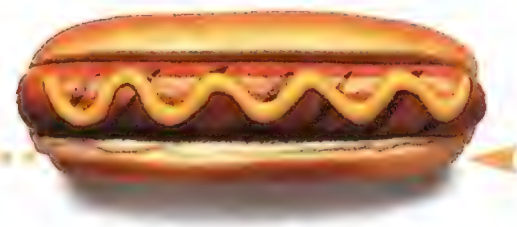
March 12, 1993:
Two Chrysler designers, working on new compact sedan late on Friday, decide to go for Chinese food. Nine hours later they arrive in Chinatown—in New York.



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Roll Over, Beethoven

WHEN PAUL MCCARTNEY FOUNDED THE LIVERPOOL INSTITUTE FOR THE PERFORMING ARTS, HE CREATED A PLACE WHERE ASPIRING STARS CAN LEARN 21ST-CENTURY SURVIVAL SKILLS

BY SUE ARNOLD

"WHICH COMES FIRST," SOMEONE ASKED IRA Gershwin, "the words or the music?" "The contract," said Gershwin. Students in the enterprise management course at the Liverpool Institute for the Performing Arts (LIPA), otherwise known as the Paul McCartney "Fame" school, will have heard that story before. Many times. Some of them may not be able to place Gershwin—doesn't he play for U-2?—but the message is loud and clear. Talent alone is not enough. To succeed in the entertainment industry these days, arguably the most competitive, hard-nosed, ruthless and insecure profession on earth, you have to be streetwise.

Whether the painful recollection of his own youthful naivete influenced McCartney's decision to open LIPA is not on record. "John and I," McCartney has said recently, "didn't know you could own songs. We thought they just existed in the air. We could see owning a house, guitar or car, they were physical objects, but a song not being a physical object, we couldn't see how it was possible to have a copyright in it. The publishers saw us coming."

Street wisdom is not one of the modules that make up a LIPA performing arts degree. If the Latin motto inscribed during the 1820s in big gold letters above the school's entrance, *Non Nobis Solum Sed Toti Mundo Nati* (not for ourselves but for the whole world were we born), does indeed apply to LIPA students, the transference is apt. Something slightly loftier than mere commercial wheeling and dealing is what its 600 students are hoping to gain from their time on Merseyside.

Of course, the students who have signed on as actors want to be the Brandos or Streeps of the millennium, and the students working out in the dance studios dream of being soloists for choreographer Mark Morris. The musicians appreciate the fact that after three years at LIPA they will have the technical know-how to be up there with rock groups like Oasis. But what happens if none of them gets that all-important break?

This is where the all-around LIPA training comes in useful. For every job as a

In the McCartney Auditorium (right), a troupe of dancers refines a choreographed piece.

PHOTOGRAPHS BY PATRICK WARD

Students gathered onstage in the McCartney Auditorium rehearse a production of *Red Ribbon Requiem*. The musical drama was inspired by the stories of individuals living with HIV.

performer (easily the toughest option in the business) there are literally hundreds of backup jobs. Look at any large live event; there may be four members of a rock group onstage, but you would be hard put to count how many people it took to get them there; designers, dressers, sound recordists, lighting technicians, promoters, drivers, managers and a host of other specialized professionals. When the Rolling Stones went on their last world tour, it was reckoned that hundreds, perhaps thousands of people were involved in getting the show on the road.

LIPA aims to show kids bent on a career in what Ira Gershwin would have simply called showbiz that there are numerous career options open to them apart from stardom. Its innovative cross-disciplinary program and specially designed high-tech facilities are currently attracting students from all over the world. But can you really teach talent? LIPA's chief executive and cofounder, Mark Featherstone-Witty, emphasizes the word "passion" as well as talent. When students apply for a place, they are asked to submit the usual personal videos, demo tapes, curricula vitae and references. But when they are interviewed, the most important asset they offer is commitment. "We provide the environment—but the student is free to express his own individuality, with experts at hand to advise, encourage and train," says Featherstone-Witty. And make no mistake: in these fast-changing and ruthlessly competitive times, a solid professional training is essential.

McCartney's involvement with LIPA these days is less hands-on than éminence grise. This, he insists, was the deal he made with Featherstone-Witty from the beginning. He wants to be free to write music. His first serious symphony—*Standing Stone*—which premiered at the Royal Albert Hall last October, took up most of his time, but even so he managed ten tutorial classes at his old school. Pinning him down for an interview is like trying to trap mercury, but I managed to corner him in his recording studio in Sussex, in between editing sessions of the Albert Hall concert video.

The previous evening he had heard that *Standing Stone* had reached number one in the classical charts on both sides of the Atlantic, but he didn't seem fazed. He looked casual in hand-knitted brown sweater, white collarless shirt and black slacks. His studio overlooks the beach at Hastings; against a dramatic backdrop of crashing surf and sea gulls he talked expansively about his venture into academia.

"I don't kid myself that I'm a teacher, but I can pass on

McCartney wants to spread the word that LIPA isn't just for rich kids—it is for anyone with talent.

a few tricks of the trade," he says. "The kids at LIPA show me their songs and I say, 'Yeah, that's great, but maybe you've got too much instrumental there too soon; why not put in another verse before the instrumental, it might work better.'" And do they always take your advice? I ask. "No way. This lad showed me his song and I said I thought one of the rhymes was a bit tongue in cheek, but he said that he liked it, so I said, 'Great, stick with it kid.'"

He became nostalgic about his own priorities when he was that age. "John and I were obsessed with song titles. We hated songs that were just called 'I Love You.' We used to pore over the American Top Ten just to study the titles. There was this one song I remember called 'Quarter to Three.' It fascinated us. What could a song called 'Quarter to Three' be about, for God's sake? So we rushed out and bought it."

He has grand long-term plans for LIPA. Encouraging kids from deprived backgrounds to apply is one aim. He would like to organize recruiting teams to spread the word that LIPA is not just for rich kids—it is for anyone with talent. His ultimate goal for LIPA is for students to write and produce a full-blown stage musical. With any luck, he thinks, it could transfer to London's West End and Broadway. "You mean like a Lloyd Webber-style show?" I suggested. "Well, yes and no," he said tactfully. "The main thing would be that all the profits, all the royalties, would be plowed back into the school. As a money spinner it could keep them self-supporting forever."

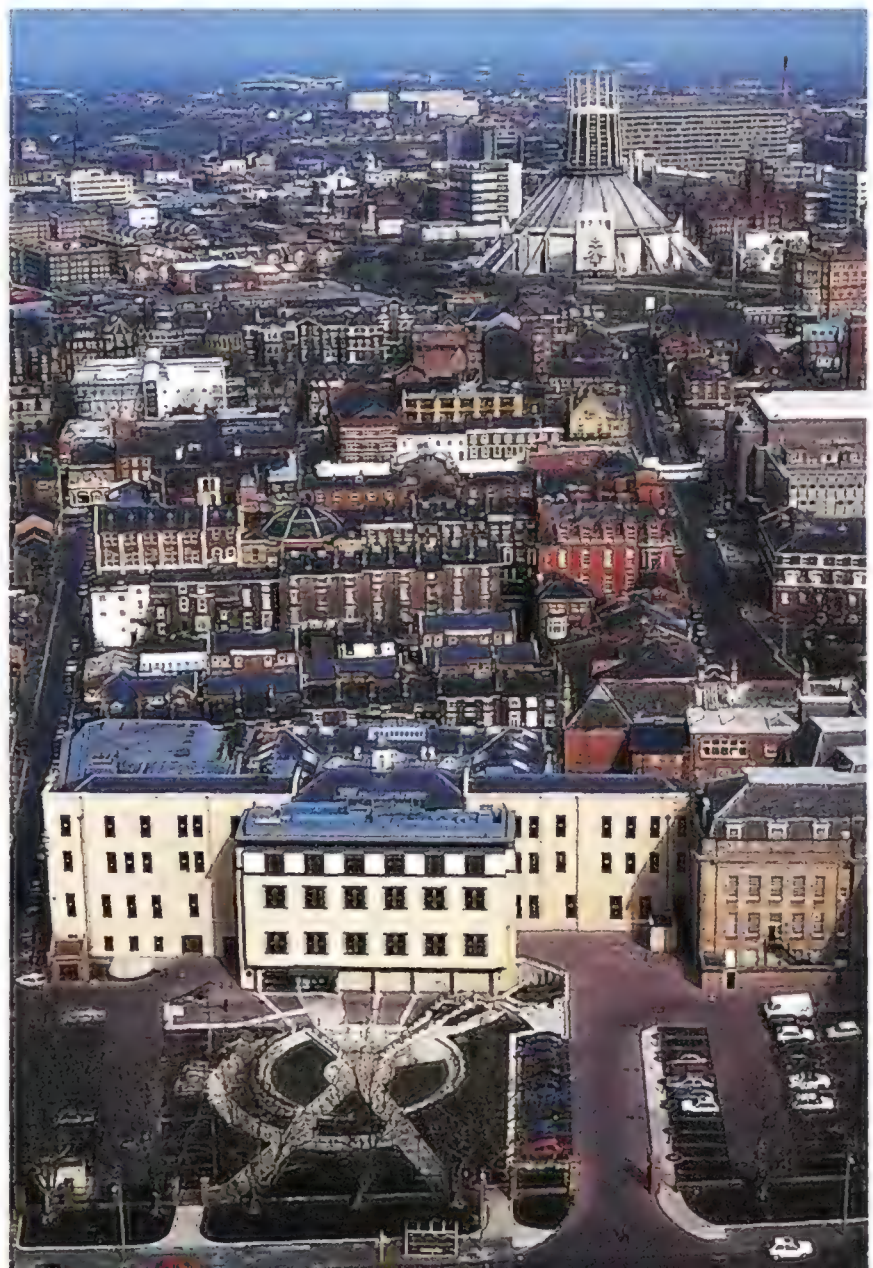
"One last question, Sir Paul," I venture. "If a kid were to write to you saying he was an ex-LIPA student, would you help him?"

"Of course," he replies, "but then I'd also try to help someone who came up to me in the village shop—personal contact is everything."

Before LIPA opened its doors in January of 1996, there was virtually no place in the world offering such comprehensive performing and technical arts training, with a B.A. degree at the end to prove it. So how did it all start? By happenstance, as all good stories do. In the mid-1980s, McCartney learned with dismay that his old grammar school in Liverpool was fast falling into disrepair. Although, along with the other Beatles, he left his home city in 1963 when the group became famous, he has never forgotten his roots. The school, built in 1825 next to the Anglican Cathedral, was originally a technical institute supplying craftsmen to the shipbuilding industry. It subsequently became a boys' grammar school with a good academic reputation. Charles Dickens and Lewis Carroll, as legend has it, were visiting lecturers. What these eminent Victorians would have made of the two fresh-faced lads—George Harrison was McCartney's classmate—who enrolled at the school in the 1950s and were destined to become half of Britain's most famous pop group is a matter for conjecture.

McCartney's interest in the plight of his crumbling alma mater coincided with the ambition of Featherstone-Witty to establish an institution dedicated to the performing arts. Inspired by Alan Parker's 1980 film *Fame*, Featherstone-Witty had visited New York's much-publicized School of Performing Arts. Its energy and passion—that word again—motivated him to plan his own version; not a high school, in this case, but a university offering degrees in many aspects of the industry, not just performance. LIPA students can choose one of six majors: acting, dance, music, community arts, enterprise management or performance design. As well as studying their special subject, all students take the core curriculum. This falls into three general categories—professional development, performance projects and performing arts theory. In other words, actors

The LIPA complex and its esplanade is a centerpiece of south Liverpool redevelopment. The building, originally an academy for shipbuilding craftsmen, was constructed in 1825.



Andrew Obaka, a 19-year-old dance major from south London, solos in one of the five practice studios. Obaka has a passion for Bengali dance, but he is studying many traditions at LIPA.

learn the rudiments of set design, musicians understand the mysteries of marketing, managers study stagecraft, and everyone learns to read the small print embedded at the bottom of the contract.

For someone with no pretensions to higher education (he left school at 16), McCartney was quick to appreciate the advantages of an interdisciplinary education. LIPA's approach, he saw, could help to shape the direction of the performing arts into the next century. From the beginning he played a key role. He put up more than a million pounds himself. Other willing backers—Grundig, Yamaha, the British Arts Council—soon came forward.

When McCartney was a schoolboy, Liverpool was a thriving city and one of the busiest ports in Europe. Transatlantic passengers like Noël Coward spent the night at the luxurious Adelphi Hotel—the Ritz of the North—before boarding. The city's dockyards bustled with orders. By the 1980s Liverpool was badly hit by the economic recession. Thousands lost their jobs and thousands left; it is still an impoverished city. Other inner cities throughout Britain were also suffering but hadn't the magic Beatles connection to breathe new life into them. Slowly and very, very expensively, the derelict building in Mount Street was restored. It now towers majestically amid streets of terraced Georgian housing. Many of the school's original features have been retained and gleamingly refurbished. The foyer still boasts four huge wrought-iron gates through which visitors pass to what was once the assembly hall. It is now the Paul McCartney Auditorium, a luxurious 530-seat theater restored to its Victorian glory but with the addition of a fly tower, flexible staging and the latest in sound and lighting technology. There is another, smaller, studio theater seating 140. The old art room has become a dance studio with a sprung floor, and there are two more studios elsewhere.

In other parts of the building you will find 30 insulated practice rooms, design studios, stage-set workshops, five fully equipped recording studios, a resource center stiff with computers, and the usual rehearsal and lecture rooms, the latter equipped with facilities for teaching advanced music technology. With millions of pounds' worth of equipment lying around, it is not surprising that only those holding special key cards can come and go. This makes casual visiting impossible. Every visitor to LIPA is struck by the sense of vitality emanating from the students. "I came in on Sunday afternoon," said a lecturer, "and counted 150 kids beavering away in the practice room. They don't regard being here as work."

Nor, to be honest, would most students for whom work in conventional academic terms means dull lectures, long essays and mountains of research. Lectures at LIPA are not dull, especially if the lecturer happens to be rock star Mark

Knopfler of Dire Straits, another of the school's glittering patrons. On one occasion Knopfler arrived at the school's parking lot en route to a concert in a bus driven by his roadie. For a couple of hours he held a LIPA master class. Fifty music majors watched enthralled as the maestro demonstrated subtle aspects of strumming technique, shared jokes and invited those canny enough to bring guitars to play along with him.

When at last he packed up his gear and set off once again for his gig, he left behind a bunch of kids with something to tell their grandchildren. Other LIPA patrons are equally willing to share their expertise with the up-and-coming rock generation. Stars from the past—musician José Feliciano, for instance—are visiting lecturers, too. And John Napier, set designer for the Royal National Theatre, made a recent appearance. Mega-entrepreneur Richard Branson, founder of Virgin Atlantic airlines, has yet to pass on his wisdom to the young enterprise managers, but they're hoping he will make time for them soon.

And they do have to write essays at LIPA. Some first-year students are required to submit a 2,500-word essay on a subject chosen by themselves at the end of the year. It may not seem like much to an Ivy League freshman, but for a drummer it can be a tough assignment. Andrew Obaka, 19, who is specializing in dance, admitted cheerfully that his first-year essay on the innovative aspects of *The Hard Nut*, choreographer Mark Morris' version of the *Nutcracker*, had been returned for revisions. "I know," says Obaka, who is from south London, "that to be able to turn in a good essay might be useful in the long run. At least it should help me write a decent CV when I am applying for jobs."

As for the projects LIPA students are expected to produce at the end of each term, they are nothing if not all-encompassing. One first-year music project was to stage a memorial to Frank Zappa. The music, original of course, was the least part of the exercise. First the show had to be funded; students had to manage the finances. Then came other student specialists: set designers, costumers, lighting experts, choreographers, not to mention promoters. Finding experts in all these areas would have been difficult anywhere but at this multidisciplinary institute. Ryan Harlin, a ponytailed 19-year-old from Philadelphia studying sound technology, remembers the exhilaration of working on the Zappa show. "The great thing about this place is the opportunity to network," he said. "If you don't know how to do something, within five minutes you can bet you will find someone who does." The place to network is the student canteen decorated with Linda McCartney's photographs and whose service counter offers only Linda McCartney-style vegetarian food.

Before enrolling at LIPA, Americans Jesse Harlin (above) and his brother, Ryan, were studying music in the United States.

Before applying to LIPA, Ryan looked at various contemporary music schools in the States. Then he happened to glance at a glossy brochure his elder brother, Jesse, had just received from England. At the time Jesse, 20, was studying voice at Temple University in Philadelphia where, coincidentally, Arthur Bernstein, LIPA's director of music, once taught. "Temple was a terrific school," says Jesse, "but orientated toward classical music. I wanted to know about songwriting and composing, dubbing, mixing, recording and enough about the practical side of business so that I don't get ripped off."

Gareth Blazey, another technology student, listened to Jesse's plans with some skepticism. "You can learn all there is about contract law and management ethics," he comments dryly, "but if a fellow in a Rolls-Royce with a fat cigar says, 'Hey kid, I'm gonna make you a star,' you'll jump at it and to hell with the small print. There are 40,000 bands in Britain chasing recording deals every year and only 200 hit the jackpot."

But then Blazey, at 28, has learned to be cynical. He and a partner ran their own recording studio in Liverpool during the early '90s. "We ran the best bedroom recording studio in Liverpool," he says. "It was cheap, dirt cheap, which is why I didn't make a penny out of it. I came to LIPA to learn how to do it properly." What he wants from his course is basic technique, contacts and the sort of exposure all the students get from the high-profile lifestyle.

To be accepted to either the two-year diploma course

McCartney, who doesn't read music, told a class wryly, "I don't hold it against those who can."

or the three-year degree course is no mean achievement. In the first year, 1,500 students applied for 50 places. Though British and other European students are entitled to a grant, the non-European applicants have to pay the full annual tuition fees (£7,500, or about $12,750) plus living expenses. The school holds auditions in the Far East, Europe and the United States. Its foreign intake is steadily increasing. Scandinavia and Japan head the list of recruits outside of Western Europe. Mimi Hiro Fumi, a drummer with a professional reputation back home in Tokyo, thought long and hard before signing on to the degree course. It would mean considerable financial hardship, and he would not see much of his wife, Keiko, for three years. But in the end they both decided that if he wanted to expand his career horizons he had to make sacrifices. "The rock scene in Japan is very insular," says Fumi, who, at 40, is one of LIPA's oldest undergraduates. "Here, I can work with international musicians and reach a wider audience. Now I play in a student ensemble with Germans, Norwegians and Americans; these are relationships I will have for the rest of my life."

Performing with an extra measure of theatricality, musicians underscore the slow tempo of a piece by playing supine. The composer was student Takaya Tsukuda.

The full-time staff (most have a performance-based background) set great store by interpersonal relationships. David Price, a keyboard player, says that he certainly learns as much as he teaches. The Beatles' legendary producer, Sir George Martin, another patron, told the students recently that "a common understanding among everyone in the music business is essential. The recording engineer must appreciate what it's like being a musician; the musician similarly must understand what it's like being an engineer."

Students concentrating in music have access to state-of-the-art equipment—plus the bonus that McCartney might appear in person and sit in on one of the projects. He never learned to read music himself, but as he wryly told one class, "I don't hold it against those who can." Students specializing in community arts, the least glitzy of the majors, focus on taking their talents to a wider audience. Nick Owen, one of the community arts lecturers, says his students are artists and activists. "Art is sometimes too important to be left to artists; we take it into schools, hospitals, prisons and street theater."

Probably the single most impressive and innovative aspect of LIPA is the enterprise management course. In an age when degrees in business administration are all the rage, this custom-built course sums up the modern approach to the entertainment and leisure industry. Not all the students want to be rock band managers. Sarah hopes to go into music publishing, Alan plans to run his own theater in the Channel Islands. One lad dreams of managing a Premier League soccer team. "Dream on," less adventurous schools would say. "Sure, why not," says the enterprise management tutor at LIPA. "Show me your business plan and we'll talk about it."

It is this everything-is-possible attitude that makes it such an exciting place. There is a story about Paul McCartney and John Lennon as teenagers going by bus to see a man in Cheshire who knew how to play a difficult but impressive arrangement of the B-flat minor harmony on his guitar. They wanted to ask him to show them how to do it. It was a long way, it was raining, it was a Saturday afternoon when other kids were playing soccer or meeting girls. McCartney and Lennon did not think twice about making the trip and returned triumphant. That same enthusiasm prevails at LIPA.

Maybe they should rewrite that motto over the entrance: "If you want it badly enough and work hard, the B-flat minor harmony is yours."

Thirty years after she contracted Beatlemania, British writer Sue Arnold got to meet Paul. Patrick Ward is based in London.

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THE LURE OF GOLD

THE NUGGET HE HAD PULLED from the mine near Sierraville, California, weighed a whopping eight pounds, so James Woolsey (above) did what came naturally during the gold rush: he had his "likeness" taken to commemorate the event. For three or four dollars, a forty-niner could walk into a daguerreotype studio—located in the tent city that had sprung up in San Francisco, or in one of the portable wagon-studios that plied the mining camps—and have a cased image made to send to loved ones back home. Business was especially brisk when a steamer was about to leave for the East. In his advertising broadside, photographer William Shew advised: ". . . it is for your advantage to call soon after the steamer leaves, and you will have a much better chance to get good pictures."

For a short window of time it was a free-for-all, as people worked shoulder to shoulder toward the same goal—gold. Very quickly the native Californians and early Spanish Californios were overwhelmed by people of all backgrounds, coming from all directions—by wagon train from Council Bluffs, Iowa, by horseback from ranchos to the south, by ship from China.

"Silver & Gold: Cased Images of the California Gold Rush," organized by the Oakland Museum of California, brings together 150 daguerreotypes and ambrotypes from that wild time. On view in Oakland from January 24 through July 26, the show will travel to the Smithsonian's National Museum of American Art and the Crocker Art Museum in Sacramento.

—*Constance Bond*

By 1852, mining operations were well under way on the American River near Sacramento.

For an image to be captured on a silvered plate, the subject had to hold still for 10 to 20 seconds. Here, clockwise from upper left: Children in costume, 1853; a Maidu Indian boy who sat for Isaac Wallace Baker in his wagon-studio—in his own short life he had seen his tribe's salmon runs ruined by placer mining; miners working at Spanish Flat, El Dorado County, in 1852—two of them black, and two white; a Chinese man, c. 1851 (also by Isaac Wallace Baker, the image is one of the earliest known of an Asian in California); Maria Rosalia Vallejo Leese, a member of one of the wealthy, landowning Californio families (her daughter, born in 1838, was the first white native-born San Franciscan); and four young miners reading a letter from home, 1854.

The ACLU Defends Everybody

BY KEN CHOWDER

ITS CLIENTS HAVE RANGED FROM MUHAMMAD ALI TO OLIVER NORTH, BUT ITS REAL ALLEGIANCE IS TO THE BILL OF RIGHTS

THE SUMMER OF 1993 MUST HAVE seemed like war in the housing projects of inner-city Chicago. In one project alone, there were 300 reports of shootings; tenants lived in terror. In response, the Chicago Housing Authority authorized police to sweep through, searching every apartment to root out guns and drugs. Most tenants welcomed the sweeps, but a handful protested. "No one has a right to break down my door and rip through my clothes without a warrant," said Ethel Washington.

She had one very powerful ally. The American Civil Liberties Union (ACLU) argued that entering a home without a warrant was a violation of the Bill of Rights. Critics charged that the ACLU was putting the abstract rights of a few people ahead of the concrete reality of families plagued by gunfire and fear. Even President Bill Clinton came out in favor of the sweeps: "We shouldn't let . . . the criminal population terrorize the country," he said.

But the courts didn't listen to the President. After two years of litigation, they banned the sweeps. The ACLU had won again.

On paper, it seems harmless enough: an organization that supports the Bill of Rights. But for eight decades the ACLU has ignited rage in liberals and conservatives alike. Bill Clinton isn't the only recent President to quarrel with it. George Bush memorably slurred his opponent Michael Dukakis as a "card-carrying member of the ACLU." And Ronald Reagan once proclaimed: "A group called the ACLU [has] severely criticized me. . . . Well, I wear their indictment like a badge of honor."

"The ACLU is often perceived as being kind of a lunatic on the fringe of a lot of issues," one higher-up in the organization admits. "I think the average person thinks we're a bunch of troublemakers," another says. And ACLU president Nadine Strossen concedes, "I suppose everybody can find a particular case we've taken that they disagree with."

The ACLU defends everybody. It's defended schoolchildren and prisoners, flamboyant personalities like Muhammad Ali and Larry Flynt, liberal Julian Bond and ultraconservative Oliver North. It has defended Ku Klux Klansmen, Communists and

ILLUSTRATION BY JEFF BERLIN

Congress shall make no law

We The People

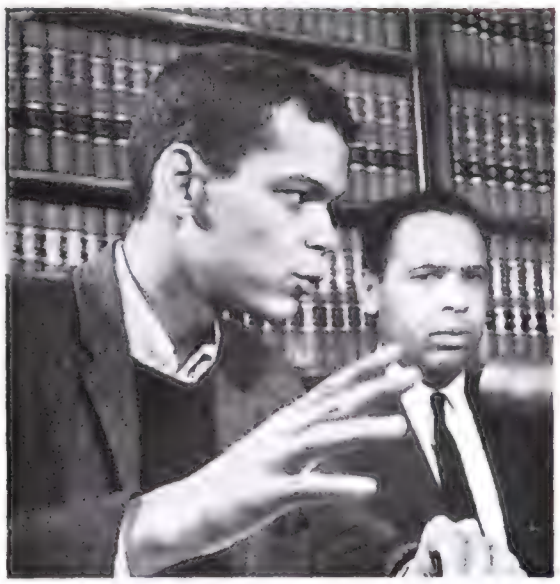
an establishment of religion,

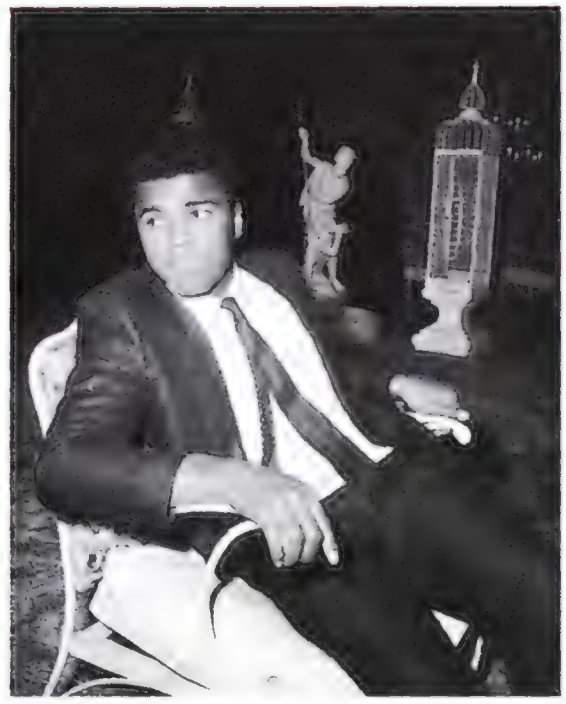
prohibiting the free exercise the

ng the freedom of speech,

of the press, or the right of the peop

What do these men have in common?





From top left: Civil rights activist Julian Bond, Irangate figure Oliver North, boxer and conscientious objector Muhammad Ali, and members of the American Nazi Party have all been defended by the ACLU.

Nazis—sometimes enthusiastically, sometimes reluctantly. "It makes my skin crawl to think of some of the guys that we had to represent over the years," says former legal director Burt Neuborne.

Admirers say the ACLU is a watchdog that protects the rights given by the Constitution; detractors insist it has a warped view of what the Constitution says. No matter what you think of the ACLU, it is probably the most potent legal organization in America, with 275,000 members, taking on some 6,000 cases annually. In the early years, it was a pro-labor group that joined protesters in the field but seldom got involved in court battles. In more recent times, it's been active in representing people on a wide range of causes. Its story is virtually a highlight reel of 20th-century legal history.

The organization's paradoxical nature came from the man who started it. Roger Baldwin not only founded the ACLU; he was its director for more than 30 years and watched over it another 30, until he died at 97.

Baldwin was an intriguing mix of contradictions. A Boston Brahmin, he claimed he was a country boy: "My father liked to farm. . . . He had pigs, sheep, cows and horses." Of course Baldwin's family also "kept a coachmen, a gardener, a cook, parlormaid, nurse, laundress and I don't know what else. I think there were seven or eight in help." And "Harvard was quite inevitable," Baldwin said. Money? "I never heard my parents discuss money."

After Harvard, he went to St. Louis to teach. Then, in his early 30s, he heard the fiery anarchist Emma Goldman speak. "I was electrified the moment she opened her mouth," Baldwin said. "I became a revolutionist." Goldman was not similarly impressed. Baldwin was "a social lion surrounded by society girls . . . a person who tried to be all things to all men," she remembered. Goldman was being a bit unfair: the social lion had already adopted two 11-year-old boys, whom he raised to maturity, and he championed progressive causes.

In 1917, Baldwin moved to New York to work for social reform. It was not a good year for free speech. This country had just entered World War I, and Congress passed laws making "seditious" words a crime. Americans were put in jail for criticizing the Red Cross at their own dinner tables. One Vermont minister was sentenced to 15 years for handing out a pamphlet saying it was "unchristian" to fight in a

war. In three states it was illegal even to teach the German language.

"The country is going wild," Baldwin said. "Free speech and press are in danger. We need a special agency to fight for civil liberties." At first, his "agency" was called the National Civil Liberties Bureau. The *New York Times* greeted it with an ominous editorial: "Jails are waiting for them." Not long after that, Baldwin was arrested for refusing to register for the draft, and headed off to jail.

When he got out a year later, he didn't race back to civil liberties work. He got married. Then he thought it might be interesting to see what a less-privileged existence was like: he rode the rails, bummed around as a common laborer. In Pittsburgh he took a turn as a union spy in a steel factory and narrowly escaped a beating by company thugs. He made 37 cents an hour in a brickyard, worked in a lead factory and was a second cook at a restaurant.

Meanwhile, political hysteria was escalating all over America: race riots, strikes, terrorism. In response, the Justice Department rounded up more than 4,000 suspected radicals. Some were arrested just for "looking foreign." In Detroit, 800 suspects were kept for six days in a corridor without windows and denied contact with the outside world.

None of this was considered unconstitutional. Though we tend to think of the Constitution as set in stone, our ideas about what we have the right to say and do have changed considerably over time. The Bill of Rights—the first ten amendments to the Constitution—guarantees freedom of speech, religion and assembly, but the government can suspend those rights in times of crisis. Thus a person's rights can vary wildly, depending on the moment and the person.

In 1920, Baldwin reopened his civil liberties office—this time calling it the American Civil Liberties Union. At first, it was a left-leaning group, with

Roger Baldwin didn't always practice what he preached but he *was* the ACLU.

Communists as the most frequent clients, but soon it began to show chameleon-like qualities. It supported the rights of a newspaper owned by Henry Ford to publish anti-Semitic statements, and of the Ku Klux Klan to send out racist literature. Roger Baldwin was determined, it seemed, to defend all varieties of free speech—and to stir up controversy in the process. In 1925, this bold approach propelled the ACLU into a sensational case called the "Monkey Trial."

A wave of fundamentalism was sweeping the country. A Kentucky teacher had been fired for teaching that the earth was round. When the Tennessee legislature passed a law forbidding anyone to teach evolution, the ACLU went into action. "We sent a release to the newspapers," Baldwin recalled, "saying anybody who wants to violate that law will get our help. And we got a fellow who volunteered. Mr. Scopes."

John Scopes, a Dayton, Tennessee, biology teacher, was the self-effacing defendant. The prosecutor was the celebrated "silver-tongued orator" William Jennings Bryan—a three-time Presidential candidate, the most

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In 1920, the year a bomb planted by an unknown terrorist killed 40 people on Wall Street, the ACLU condemned a Justice Department roundup of "radicals."

famous religious fundamentalist in America, a massive man who in one breakfast could eat a huge melon, six eggs with ham, pancakes drowned in butter, three plates of hash browns and a brace of quail. The defense rested in the hands of the folksy, theatrical Clarence Darrow, widely regarded as the country's greatest trial lawyer. Darrow would have his hands full: signs exhorting everyone to "Come to Jesus" and "Read Your Bible" were plastered all over town—even in the courtroom.

The trial lasted for eight long, hot days. Darrow put the Bible itself on trial, calling Bryan to the stand as an expert witness. Bryan maintained that every word in the Bible was literally true. Darrow slyly asked: "The Bible says every living creature not on Noah's ark was drowned . . . does that mean the fishes drowned?" "The sun stood still for Joshua . . . does that mean that the sun was moving around the earth before?" Bryan fell into every trap; he left the stand devastated. A week later, he died.

It had taken the jury a mere nine minutes to reach a verdict: Scopes was found guilty. He was subsequently acquitted on a technicality, and 22 states soon defeated bills prohibiting the teaching of evolution.

For the ACLU, the Monkey Trial was a public-relations coup. Coverage

was broadcast live by a Chicago radio station, and newspaper reporters from all over the country (including the legendary H. L. Mencken) filed daily reports. Many Americans now saw the group as the defender of enlightened common sense.

Over the years, the ACLU would consistently portray itself as a constitutional gadfly dedicated to the protection of lofty principles like the separation of church and state. But William Donohue, who has written a book critical of the organization, claims that it was never really about principles. "Roger Baldwin didn't give a hoot about civil liberties. He was only interested in servicing the far-left labor movement." In the early days, Baldwin would have agreed with that. "The cause we now serve is labor," he averred.

In the 1920s, anti-unionism intensified as a wave of strikes swept the country. The protests often turned violent, and injunctions against labor rallies were common. When 8,000 silk workers went out on strike in Paterson, New Jersey, the mill owners retaliated with injunctions that made it illegal for strikers to picket or hold meetings. Baldwin led a demonstration. A number of demonstrators were arrested, but not Baldwin. He was furious.

By the 1930s, the tide began to turn. Congress passed the Wagner Act guaranteeing the right of labor to organize. It was now the duty of the police to protect the right of freedom of assembly—not take it away. "We tended to represent labor organizers during the '30s," the ACLU's Burt Neuborne says. "And large numbers of the labor organizers were Socialists or Communists." Roger Baldwin himself was no stranger to Communism. He'd traveled to the Soviet Union and raised money for a collective farm there. He nurtured dreams of an ideal society. "Dictatorship is the obvious means," he wrote, not sounding much like a civil libertarian. "Communism is the goal."

When Nazi Germany and Soviet Russia signed their infamous nonaggression pact in 1939, Baldwin, shaken, executed a swift about-face. "I resigned from every connection with the Communists," he wrote. "Since then, I have been a consistent opponent of . . . Communism." He distanced himself from his former tendencies—and some former friends.

In 1940, he pushed through a resolution that barred Communists from the ACLU board. "The resolution merely states what has been always the unwritten policy of the Union," Baldwin tried to argue, but that was plainly untrue. He was doing some-

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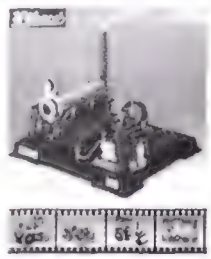

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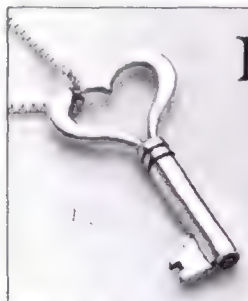

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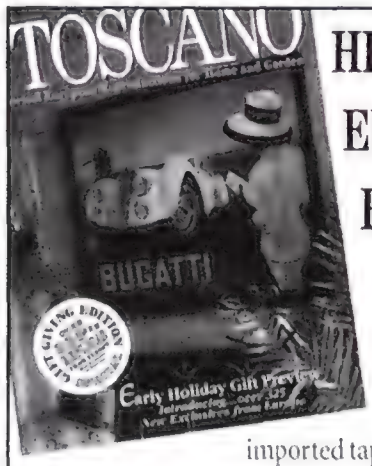

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After Paterson, New Jersey, silk-machine operators voted to go out on strike, ACLU chief Roger Baldwin led demonstrations supporting their right to picket.

thing he'd never done before: claiming that civil liberties were for some people and not others.

Several leftists resigned promptly, but one of them needed a big push. Elizabeth Gurley Flynn was a longtime friend of Baldwin, and an ACLU founder. She was also an ardent Communist and a plucky, independent spirit. At a meeting of the ACLU board in New York City one night, Flynn was required to testify at what amounted to a trial. "This violates every principle we fought for in the past," she asserted. She was right. The resolution was a blow against free speech. But Flynn was expelled from the ACLU by a single vote. Baldwin broke off their friendship.

Flynn's ouster was a moment of weakness, but in 1942 the ACLU took a step of great courage. Virtually every organization in America sat idly by while the federal government moved 100,000 Japanese-Americans, mostly on the West Coast, into internment camps. Even the Japanese-Americans, in their desire to appear patriotic, peacefully accepted the order. The objectors among them numbered only a dozen, including Gordon Hirabayashi, a student at the University of Washington. "My mother wanted me to come with the family to the camp. She said, 'It's a matter of life and death. Why stick to a principle? Stick with us.' She used everything—tears and everything. But I couldn't do it."

ACLU organizing and fundraising helped Hirabayashi mount a legal challenge to internment. In the end, though, the bitterness of war was too powerful. "A Jap's a Jap," one general told a congressional panel; the Supreme Court ruled unanimously against Hirabayashi.

In the years after the war, Baldwin's willingness to champion the unpopular cause wilted again. The Iron Curtain came down; the House Un-American Activities Committee and Senator Joseph McCarthy denounced the "Communist menace" within America. Baldwin was now embarrassed by his old associations, and to protect his image, he hopped on the anti-Communist bandwagon. Illegal wiretapping and surveillance by the FBI escalated, but the ACLU

An Army corporal assists a Japanese-American family headed for an internment camp in 1942. The ACLU helped mount an unsuccessful challenge to internment.

did nothing. Years later, in fact, documents were released showing that a high-ranking ACLU official had provided FBI director J. Edgar Hoover with information, and that even Baldwin had identified one person as a "fellow traveler."

One afternoon in 1950, an older man in a rumpled suit began to filibuster an ACLU meeting. The man was Roger Baldwin himself, 66 years old, trying to stave off the inevitable. Eventually a board member interrupted: "Everyone knows why we're here." Baldwin sat down in a corner, dejected, as the board recommended "that Roger Baldwin be entirely relieved from executive responsibilities." The ACLU was kicking its founder upstairs.

Roger Baldwin had always held the ACLU on a short leash and a tight budget. He thought of it as a small, elite, fast-moving organization, but the board wanted to develop more offices and greatly expand the membership. Probably there were personal reasons for the change as well. Baldwin could be witty and charming; he could also bully his staff. His concern for the underdog never interfered with a snobbish fondness for "the best people." He worked hard for minorities, then nearly stopped talking to his daughter after she married an Italian. Nudism was a standard part of his country weekends, but he was squeamish about sex. Some say Baldwin never made a final commitment to anything.

In his absence, the ACLU began to carve out a more activist role for itself in the courts. The catalyst was a flamboyant behemoth of a man named Chuck Morgan, who was the director of the ACLU's new Southern Regional Office. The organization had long taken a part in civil rights cases, but not a central one. While the National Association for the Advancement of Colored People took the lead, the ACLU quietly filed "friend of the court" briefs. In fact, the union seldom represented clients directly. "They weren't getting their hands dirty," Morgan says today.

The hyperbolic Morgan was a one-man whirlwind. He led the ACLU into the forefront of the civil rights movement of the 1960s—desegregating

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Clarence Darrow, left, bested William Jennings Bryan in the famed "Monkey Trial."

juries, reforming the election system in Georgia, getting segregation outlawed in prisons. Then he took on the Vietnam War. He represented Julian Bond, who'd been excluded from the Georgia House of Representatives for declaring himself in sympathy with draft resisters. Later Morgan would represent Muhammad Ali in his conscientious-objector case. But the client in Morgan's most spectacular case was an obscure dermatologist from Brooklyn named Howard Levy.

In 1966, Levy was drafted into the Army. Shortly after his induction, he was court-martialed for refusing to train special Green Beret medics. For Levy, the Green Berets "were not just medics . . . they were in fact killers." Levy adds, "I drew the line and said I can't do that." Ira Glasser, executive director of the ACLU, frames it this way: "The central legal issue was, does the Bill of Rights apply to the military? If you distributed a leaflet out in the street, a cop couldn't punish you for it or arrest you for it . . . [but] if you tried it in the Army you could get court-martialed."

Chuck Morgan jumped at the chance to defend. At first, his case wasn't going well—the jury of Army officers had little sympathy for free speech in the military, especially during a war. But then the presiding Army judge suggested a new defense: "war crimes." Perhaps a doctor would not be "morally bound" to train

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When Sen. Joe McCarthy went after Communists, ironically Baldwin joined in.

Green Berets if it could be proved that they were committing war crimes in Vietnam.

Morgan pulled out all the stops. He put the controversial antiwar crusader Dr. Benjamin Spock on the stand as a character witness and submitted a telegram from Jean-Paul Sartre in evidence. He held riotous court in his motel room for reporters, and the court martial got international publicity. It was a legal circus, but in the end all Howard Levy got to show for it was three years in a military prison. The case was more sound than fury.

Still, Levy's case was a turning point—the moment when the ACLU stopped being shy about directly representing clients in court. But some board members thought the case was a political attack on the war—not a civil liberties issue. "There was some sniper fire," Morgan recalls.

As early as the fall of 1972, Chuck Morgan had made up his mind that Richard Nixon had to go. Morgan consistently tried to link the Watergate burglary to the White House, filing an ACLU motion that called the Watergate trial "tainted by . . . perjured testimony." The ACLU was among the first groups to call for President Nixon's impeachment. To some members, it was an unthinkable jump into partisanship. But the call for Nixon's ouster made ACLU membership skyrocket. Baldwin's once elite group had now expanded to

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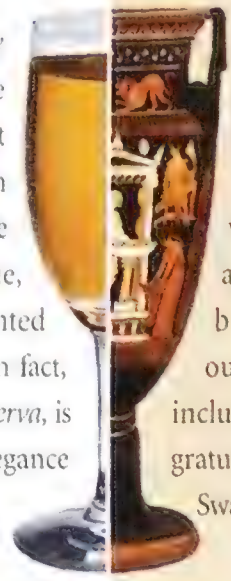

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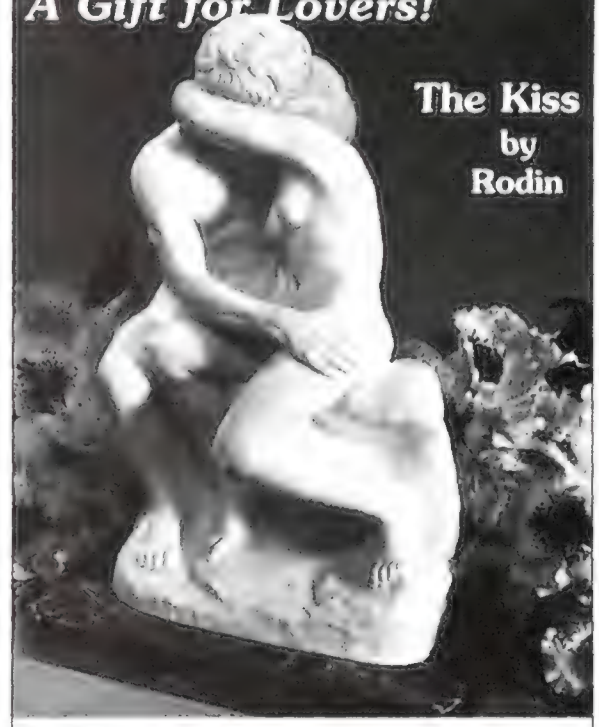

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275,000 members. The organization would soon discover, however, that what goes up can come down.

One April day in 1977, a prominent ACLU member told the director of the Illinois chapter: "I spit on you." Why? Because the ACLU was defending Nazis. In February, Frank Collin, the head of the National Socialist Party of America, had announced that his organization would hold a demonstration next to the village hall in Skokie, Illinois. Skokie was no ordinary town. It was nearly half Jewish, with 1,000 Holocaust survivors among its residents. Immediately the town banned the impending demonstration.

Although many of its members were Jewish, the ACLU quickly took the Nazi case. Why? Because the ACLU sees free speech as an absolute: any definition of what can and can't be said is the road to tyranny. As Burt Neuborne says, "There's nobody, there's no message, there's no idea, that is so unpopular that it can't be expressed. . . . This is what the ACLU is all about." But critic William Donohue disagrees: "The Nazis are not just like some unpopular group. They are urban terrorists. . . . There is a danger in treating them as if they were the Boy Scouts."

The ACLU won its point in court but suffered a terrific political backlash. Many of its members were outraged. How could they support the free speech of groups that fought against free speech? Wasn't there such a thing as good and evil?

George Bush exploited the ACLU's political vulnerability when he ran against Michael Dukakis for the Presidency in 1988. Bush's pollsters discovered that most Americans had a negative reaction to the name ACLU. The Moral Majority and feminists alike were repelled by the ACLU's position on pornography. It consistently opposed almost all bans on pornography; it defended both James Joyce's *Ulysses* and Larry Flynt's *Hus-*

tler magazine against censorship, in epic court cases decades apart. Calling Dukakis "a card-carrying member of the ACLU," Bush implied that Dukakis was soft on this issue and other unpopular ACLU causes. Bush said: "I have not joined the ACLU, nor do I have any plans to join the ACLU." His tactics worked well: Dukakis let the assault stand, as if it were indeed shameful to be an ACLU member.

Since then, many people have thought of the ACLU as "liberal," an idea that is hotly disputed by its leaders. "If that's the case, why in God's name would we have defended Oliver North?" asks Ira Glasser.

North says of the ACLU: "They've taken some very tough stands on some very tough issues. I'm one of those examples." He was compelled by Congress to give testimony about his role in the Iran-Contra scandal, or else face charges of contempt. The courts then turned around and convicted him on the basis of his own words—testimony he'd been required to give. The ACLU saw this as a violation of his constitutional right not to incriminate himself. North's conviction was overturned.

In recent cases, the ACLU has continued to follow its characteristically iconoclastic course, championing the underdog in battles over affirmative action and the rights of gays, immigrants and Internet users. Following the Supreme Court's decision in 1996 to strike down Colorado's notorious anti-gay law, the group's national office issued this quintessential ACLU statement: "While this landmark decision won't end the right-wing assault on the gay community, it . . . puts governments on notice that laws based on hostility to gays and lesbians—or any other group—will not be tolerated."

Where does the ACLU stand? At times it's hard to tell. What is certain is that our modern definition of liberty has been greatly influenced by the ACLU. Justice Oliver Wendell Holmes wrote that the Constitution "is an experiment, as all life is an experiment." For better or worse, the ACLU, and America, are still tinkering with the meaning of freedom.

Ken Chowder is the author of The ACLU, *a documentary by Florentine Films/Hott Productions and KCTS-TV, Seattle, to be aired this year on PBS.*

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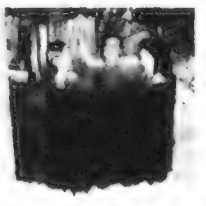

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Rachel Carson: Witness for Nature

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WHEN RACHEL CARSON'S *Silent Spring* was published in 1962, Supreme Court Justice William O. Douglas and E. B. White of the *New Yorker* both compared the impact of the book to that of *Uncle Tom's Cabin*. Carson's study of the dangers of pesticides, said White, was a work that would "help turn the tide" of environmental degradation. Time has proven him right: *Silent Spring* changed our thinking, our society, our world.

Carson, at least superficially, seems an unlikely prophet. She spent most of her working life inside a government agency, the Fish and Wildlife Service, editing technical studies and writing booklets publicizing departmental preserves and programs. Her biographer describes her, in what seems like a triumph of understatement, as "emotionally as well as physically constrained." Still, when the environment needed an advocate, few were better prepared than Carson.

She had a first-rate scientific education, including three years of graduate study in biology at Johns Hopkins, and a deeply spiritual love of the natural world. During her years in the Fish and Wildlife Service she had acquired a network of connections with researchers and policymakers in Washington's environmental bureaucracy. She was an award-winning author of two best-selling books about the ocean—*The Sea Around Us*, published in 1951, and *The Edge of the Sea*, which was published four years later. When Rachel Carson talked about a threat to the environment, people were going to listen.

As a child, Carson was fascinated by the natural world. She also loved writing. But science, she decided, offered a more realistic career. In college she concentrated on biology, and then won a full scholarship for graduate study at Johns Hopkins and a summer appointment at the Marine Biological Laboratory at Woods Hole in Massachusetts.

Then family difficulties, and the Great Depression, intervened. Carson's household—her parents and the families of her brother and sister—was in strained circumstances. In 1934 she dropped out of the PhD program and began looking for work.

Carson took a part-time job writing scripts for a radio program produced by the U.S. Bureau of Fisheries. Then, in 1936, a position for an aquatic biologist opened up at the Bureau of Fisheries. Carson was chosen for the job. "I had given up writing forever, I thought," she wrote several decades later. "It never occurred to me that I was merely getting something to write about."

That "something" was the sea, and the life that filled it. For the next 15 years she wrote formal studies, booklets and brochures during the day, then used what she had learned to write freelance articles and essays for broader public consumption. Her first book, *Under the Sea-Wind*, had the misfortune of being published the year America entered World War II. Still, it established her reputation in the world of commercial publishing and led to a contract for a second book, *The Sea Around Us*. The success of this book allowed Carson to quit her job and become a full-time writer.

Rachel Carson, a biologist by training, became a writer by writing. But it was her love of nature—and particularly the world between the tide lines near her summer cottage in Maine—that made her an environmentalist. When people began to recognize the dangers of pesticides in the 1950s, Carson was able to understand the science involved and explain it to the reading public. Still, *Silent Spring* would never have had the impact it did if Carson had not believed, fervently, that the indiscriminate use of environmentally persistent pesticides threatened the entire fabric of the natural world she loved.

Lear's biography contains too much inconsequential detail and says too little about the intellectual context in which Carson's ideas developed. Nevertheless, it offers a fine portrait of the environmentalist as a human being; an odd and obsessive woman buffeted by the difficulties of life, yet still ready to watch and wonder and find fascination in the world around her.

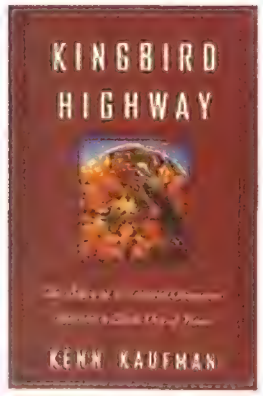
John R. Alden, a writer living in Michigan, is particularly interested in natural history and the history of environmental preservation.

Kingbird Highway: The Story of a Natural Obsession That Got a Little Out of Hand

Kenn Kaufman Houghton Mifflin, $23

THIS BOOK IS ONLY TANGENTIALLY about birds. *Kingbird Highway* is really about monomania. It is 1973: psychedelically painted VW vans pump out Jefferson Airplane tunes. Drivers flash peace signs. Beside the highway stands a Jesus look-alike, thumb out.

Kenn Kaufman certainly had the au courant long hair and beard, and hobo couture. But he did have one peculiar appurtenance: around his neck hung high-powered binoculars, painted shiny gold. His ornithology fixation had already set in by his ninth birthday, when Kaufman's family moved from South Bend, Indiana, to Wichita, Kansas. En route he discovered hitchhikers, those traffickers in his future modus operandi. "Was



there something wild, something from outside my comfortable world, in those faces?" he wondered. But mostly the boy in the backseat scanned fences, wires, the tops of elms. He had "a mission, a passion: I was watching for birds."

Other boys idolized halfbacks or shortstops. Little Kenn's hero was Roger Tory Peterson, the bird-book man. Kaufman was an honors student. But at age 16 he quit school to chase birds. Among the few rules his trusting parents imposed was "no hitchhiking." But birding via Greyhound palled. He soon joined the roadside thumbers.

On his birding peregrinations, Kaufman slept under bridges, ate cat food, picked apples for traveling money. Then true ornithomania hit—he discovered "listing": he became addicted to *tallying* birds, to adding to his species-I-have-seen list.

Kingbird Highway is about Kenn Kaufman's "Big Year." He aimed to show up at the right habitats at the right moments to bag birds he needed for a record one-year tally. Ornithologists figured 650 species lived in the United States and Canada, plus visitors. Nobody, it was assumed, could possibly see them all in one lifetime. Roger Tory Peterson, in 1953, totaled 572 species. In 1956, a lister hit 598. But by 1973 publications detailed which birds hung out at virtually all key North American sites. And a birder grapevine allowed no rarity to show its tail feathers without bird addicts converging within hours, brandishing scopes and Leicas. When Kaufman began, the record stood at 626. Can our contender beat that?

It will prove one doozy of a hitching hegira. But Kaufman has barely started when he meets, as he's seabird watching from a boat off New England, a Michigan college teacher, also doing a Big Year. Sir Lancelot versus Sir Mordred. Our man has more time, if you subtract how long it takes to hitch from Arizona to New Jersey to bag a spotted redshank. But his opponent has more money.

By July, an exhausted Kaufman beats the record, hitting 630 birds. But is Sir Mordred ahead? He hitches on, "beginning to feel the mileage." He gives us hitching hints (fewer cars after midnight, but drivers may want a rider to help them keep awake). He gives us ornithological insights ("The uninitiated are surprised to learn that dumps are very birdy places"). Mostly, he gives us a running tally (White-Collared Seedeater, Boreal Owl, Black-capped Gnatcatcher, Azure-rumped Tanager, Rhinoceros Auklet, Horned Guan). His list passes 640.

Then, an epiphany: he meets a physician who studies each bird species in diagnostic depth. Kaufman realizes his own bird knowledge, focused on notching up his list, is shallow. He reaches a total of 650 species, the theoretical maximum. By now he barely cares.

On Alaska's St. Lawrence Island, he looks across the Bering Sea to distant Siberian mountains. He finally truly *sees* the Alcid-family birds flying by "with tightly bunched flocks, long single files, disciplined chevrons, wavering streams, isolated pairs. . . ."

Kaufman does not even report who won the Big Year battle. Readers can find the ambiguous answer in the appendix. After hitching 69,000 miles, he discovers his list does not matter.

Awakening one dawn, frozen in a snow-covered car, he realizes, "with chilling clarity, that birding is a ridiculous activity." But birding has led him down many roads.

Along the way, Kaufman also has found his sustaining life's work: today, as a distinguished ornithologist, he is recognized as the author of *Lives of North American Birds*.

Reviewer Richard Wolkomir writes from his home base in Vermont.

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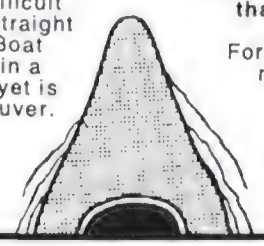
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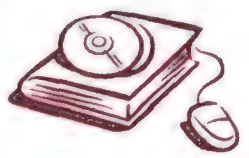

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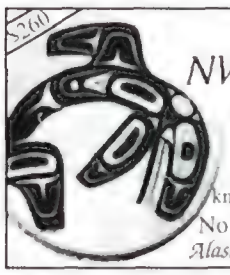

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THE LAST PAGE

No Tea, But Sympathy

BY EDITH PEARLMAN

AT FORGET ME NOT WE TRADED in antiques of middling quality: coronation plates and fin de siècle purses. Pauline Rennie was the owner. I was her only employee. Together we sold oval portraits of phthisic women, doomed to die young. I was young myself.

Nobody wanted to buy the Victorian table and chairs, set for a tea never served. But certain women customers flung themselves into those chairs, banged their elbows on the table, slid their fingers over their brows and burst into tears. Then they talked.

Faithless men, disappointing children, unsteady bank accounts—these were the topics. I heard racy particulars. A betrayed wife fell in love with her own detective; her husband caught them in flagrante delicto. A son quit law school to become a gag writer; his mother went into seclusion, creeping out only to Rennie's.

Rennie produced a decanter of sherry. The customer regained her equanimity. Later, when we were alone, Rennie herself grew talkative. One day she told me the things she'd sell if she could get enough cash to buy them: brocaded fauteuils and Irish coffeepots. "Cabochon-cut garnets," she moaned, banging her elbows on the table. "Chinese vases," she said, feeling her brow.

Mrs. Ned, estranged wife of a judge, was one of our regulars. She dressed like a derelict. One morning she thrust an object into Rennie's hand. Rennie looked down at a cigarette case covered with tortoiseshell and rimmed in gold. She used her loupe. She sighed. "Exquisite."

Rennie looked down at a cigarette case covered with tortoiseshell. She used her loupe. She sighed.

"It stands between me and desolation," said Mrs. Ned, her mouth working in her twitching face. Her eyes maintained a steady ferocity. "The judge has turned off my utilities, disavowed my bills, compiled an inventory of mental anguish. What will you give for this bibelot?"

"This is a Fabergé," said Rennie. "I can't afford it." She held the case out to Mrs. Ned. Mrs. Ned refused it. The lid flew open. Mrs. Ned selected a cigarette. After a moment Rennie also took one. They tipped their ashes into a millefiori ashtray. "Rennie, this item stands between me and deso—"

"It is worth three thousand," said Rennie. "I wish I had three thousand. New York dealers would pay—"

"Three hundred is all I will take for the devil's gift."

Rennie acquiesced. Mrs. Ned left, lumbering toward her house, her mind as disconnected as her electricity. That husband—had he loved her when she was frivolous and pretty?

I washed the ashtray in our bathroom. Rennie would travel by train to New York. She'd get off at Grand Central. She'd walk to a dealer on Madison Avenue. There she'd turn the Fabergé into enough cash to start trading at last in cabochon-cut garnets and Chinese vases.

I waited in vain for Rennie to go to New York. After a few weeks, Mrs. Ned reappeared. "Rennie! The judge has got religion, he is paying my bills, he has given me cash. I want to repurchase my Fabergé."

Rennie opened her safe and handed the case to Mrs. Ned. "Three hundred, right?" said Mrs. Ned, counting out six fifties.

"Right," said Rennie, taking them.

Mrs. Ned's head became still. "You are an honest toiler in the land of Mammon," she said. "I hope this young fool"—she did not look at me, but there was no other young fool in the shop—"has learned something from your example." Muttering peaceably, she made her way out. Rennie busied herself with paperwork. I brought out the sherry.

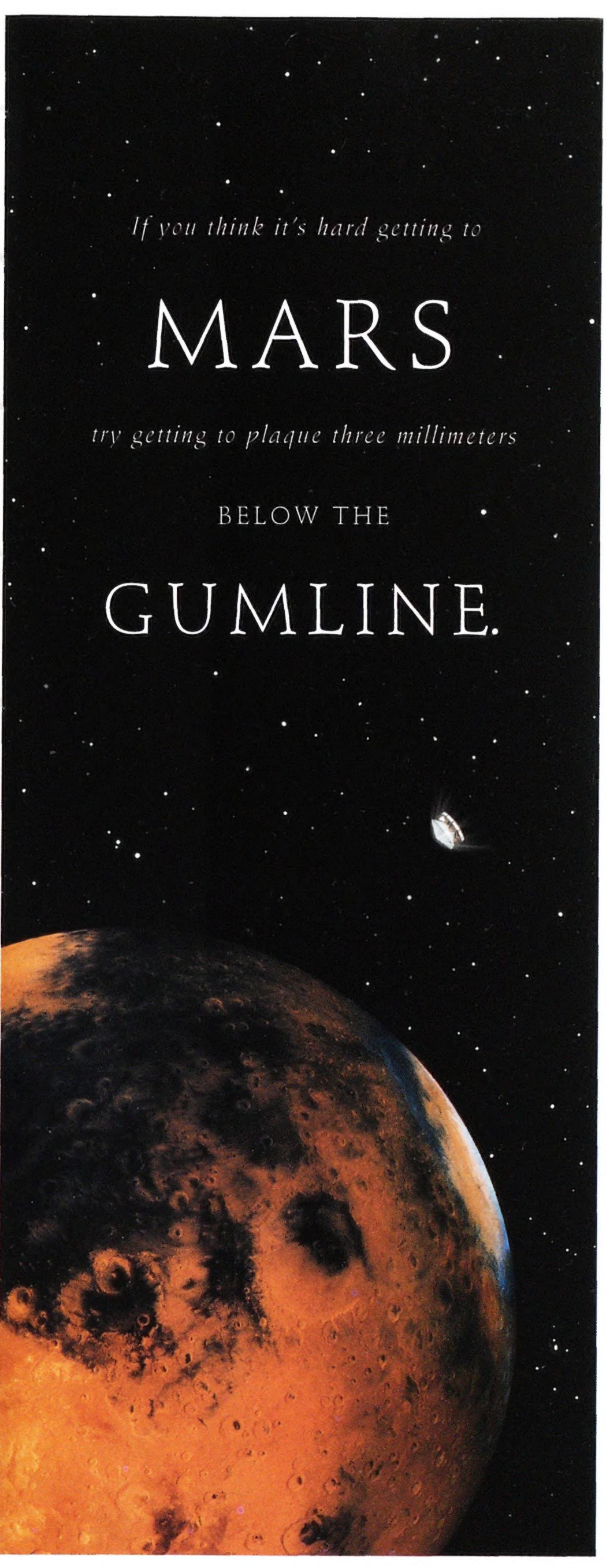
If you think it's hard getting to

MARS

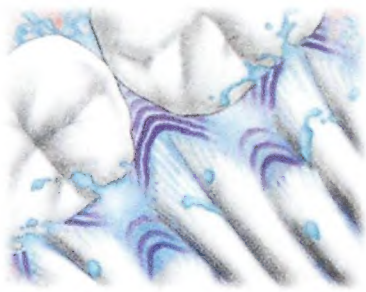
try getting to plaque three millimeters

BELOW THE

GUMLINE.



With all due respect to the Pathfinder program, exploring the farthest reaches of *inner* space can be almost as challenging. That is, unless you have the



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